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Wakefield Opens 1923 Season

*By* Kendrick Scofield

Every-Day Ballistics

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# The AMERICAN RIFLEMAN

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WASHINGTON, D. C., SEPTEMBER 1, 1923

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## Wakefield Opens 1923 Match Season

By Kendrick Scofield

THE Clan of American Riflemen which each year gathers at Wakefield to fire the season's curtain-raisers, moving on to Sea Girt and, ever growing numerically stronger, invades Camp Perry for the big wind-up matches, measured strength on the Massachusetts Range August 20-26.

To the big Marine Corps and Coast Artillery Team Squads, whose members had been in training there, were added teams from a number of Massachusetts units, so that the Matches of the United Services of New England presented an interesting and often difficult program, and supplied that spur of actual competition which is needed to whip team material into shape.

Never has the Wakefield Range been better, the Marines reporting that during a stay of nearly three weeks, only one-half day was lost from shooting on account of rain; the peculiar geographical conditions existing at Wakefield, however, made the competition keen at times—especially during the Hayden Match, where the 1,000-yard stage proved the Waterloo of most of the shooters. In this event, six teams entered, two each from the Marines, the Coast Artillery, and the National Guard of Massachusetts. Firing the 200-yard Off-hand and the 600-yard Slow Fire simultaneously during the morning, and then catching up the schedule with the Rapid fire stages, all teams had fairly easy going up to the time when they went to the 1,000-yard line during the afternoon, on August 23. Having averaged 45.8 Off-hand and done comparatively better at rapid fire and the mid-range, the Marines seemed to have the match sewed up. But the first few shots at 1,000 yards told them that there would be a fight which would call for the best the old dopsters had in them.

A bright changing light and a shifty wind caused the trouble, the shooting having called upon to reckon corrections from  $\frac{1}{2}$  to  $2\frac{1}{2}$  points, with a guess as good as anything else, and the guess usually either a bit wrong or complicated by sudden light changes which affected elevations. Even the best men among the Marines scored occasional Twos, and the team average was 86.7 for this range, which is far below that aggregation's normal averages. The match ended in a victory for the First Marines, on a total of 2738 points, with the Second Marines second on 2707 points, and the Coast Artillery third on 2700 points.

The Hayden Match, together with a new event calling for an unmarked score and known as The Homer Match, and the Snipers Match, which was tried out last year for the first time, were the highlights of the program.

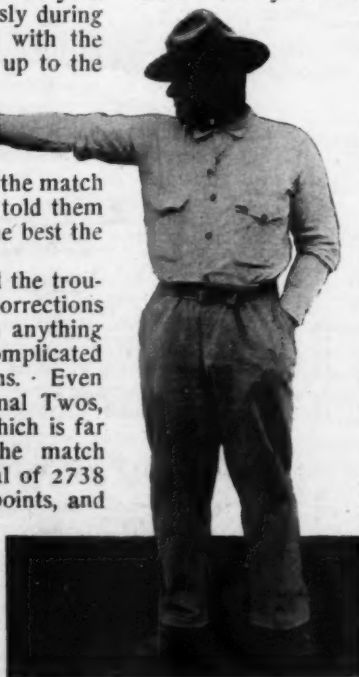
The Homer Match calls for 10 shots slow fire.

The targets are exposed for 10 minutes, the contestants fire, and the target is then pulled and marked. During the first part of the match, four possible scores were fired by Joe Jackson, Blade, Tillman, and C. A. Lloyd, of the Leather-necks. This tie was broken by Lloyd, who ran another possible. In the meantime, and firing late, Sergeant Otto Benz, the Coast Artilleryman who last year taught himself to shoot right-handed, although he is naturally a southpaw, ran up a possible, and learning of Lloyd's second possible, ran a second, tying Lloyd again. In the second shoot-off, Lloyd scores nine bull's-eyes and Benz only seven, taking second, leaving Jackson third with a possible plus 7 bulls.

The Snipers Match, which was inaugurated last year, appeared this year under improved conditions, which made the event even more interesting and a greater test of skill. Last year, within the boundaries of a target painted to represent a ruined village, silhouette targets were exposed at varying localities for a few moments. All shots were hits or misses, and the result was that the tied scores were many, the shoot-offs consuming much more time than the match itself. This year each silhouette bore a 10-inch circle counting five. The remainder of the target counted four. Sergt. R. L. Jennings and Sergt. N. Tillman, of the Marines, scored possibles in this match, agreeing to shoot it off in the 300-yard rapid fire stage of the Hayden. Jennings won the event.

The Marines took every event open to them except the Campbell Match, at 300 yards slow fire, which was won by the Coast Artillery shot, Sergt. Benz on a possible score plus 26 bull's-eyes, with Lt. L. A. White, of the Coast Artillery, second on 22 additional bulls, and Sergt. Emil Blade, of the Marines, third, with 20 additional bulls. In this match there were eight possible scores.

Aspirants for honors in the All-Around Championship at Camp Perry, an event which always lines up the pick of the combination shots will have to beat a newcomer in their ranks this year. Sergt. John M. Thomas boldly tossed his hat into the All-



Sgt. John M. Thomas, who won Grand Aggregate

Around Championship ring at Wakefield, and celebrated his candidacy by winning the Grand Aggregate prize with nine points down while the best that any of the other hardened shots were able to do was ten down.

Back in 1913, when Thomas was a Cavalryman, a fact now belied a bit by his physical bulk, he was handy with the rifle. But after his enlistment in the Marine Corps he became enamored of the hard hitting Army Automatic, and for the past several seasons has been giving most other sharks with the handgun considerable of a run for their money.

This year Thomas joined up with one of the Interstate Marine Corps teams, and in firing for record under match conditions he tied the match record score of 339 made last year by Coulter. This, more than anything else, was responsible for setting Thomas to figuring his chances for getting away with the All-Around Championship this year.

But there is more to the All-Around than rifle and pistol. The scattergun bothered Thomas not a little, but he figured out that Major Frazier, Charlie Hogue, and Hall, of California, who have won the three previous championships, averaged not greatly better than 22 with the shotgun. Thereupon Thomas purchased himself a trap and during week ends and holidays this year has burned up something like \$700 worth of shells.

Up at Wakefield nobody was paying any particular attention to Thomas in the Grand Aggregate, which included matches Off-hand at 200 yards, and Slow Fire at 300, 600 and 1,000 yards, and the gang was wondering just how a tie between three other contestants, each of whom was 10 points down, would be decided when the statistical office discovered that Thomas had decided the matter for them, with a score of only nine down.

Dark horses won the Two-Man Team Match fired on August 21. They were Lt. W. J. Scheyer and Capt. Harry K. Pickett, of the Marines, who hung up a total of 185, outranking Capt. E. H. Parsons and Sgt. James Wertzberger, of the Coast Artillery Corps.

The only possible made at 1,000 yards during the shoot is credited to Col. J. R. Tucker, of the Marines, who ran 12 bull's-eyes in the Lynch Match at that range.

The McKenzie Match, 10 shots slow-fire at 600 yards, proved easy pickings so far as possible scores were concerned, five of the entrant making better than perfect scores. This match was won by Lt. A. A. Gladden, of the Marines.

The Phelan Match, calling for Rapid Fire at 300 yards, was an interesting and exciting event. Once over the course found Cpl. G. L. Sharp, of the Marines, Capt. J. T. Campbell, and Lt. L. L. Lemmitzer, of the Coast Artillery, tied with possibles. On the first shoot-off, Lt. Lemmitzer dropped out with a possible and 47 points, but Sharp and Campbell each scored 49. A second shoot-off left them still tied on scores of 48, and a third shoot-off gave the match to Sharp on 46 against Campbell's 44.

The Lyman Match at 200 yards, rapid fire,

on the A target, went to Sergt. T. H. Gasbrouck, of the Marines, with a possible plus 10 bull's-eyes, with Cpl. G. L. Sharp second with a possible plus 8 bull's-eyes.

A creditable off-hand score, considering the weather conditions, was made by Priv. Tucker, of the Marines, in winning the Off-hand Match at 200 yards. He scored 49 points, having dropped one of his fourth shot.

The Logan Match, similar to the McKenzie Match, calling for slow fire at 600 yards, was another event in which additional bull's-eyes were needed for victory. This match was taken by Cpl. W. M. Beckett, of the Marines, with five additional bulls, with Sergt. Jennings, of the Marines, second with three additional bulls.

While practically every individual match was won with a run of additional bull's-eyes, this year at Wakefield developed no phenomenal scores, although the matches were characterized by shooting of a very high average. Also, although the Marines and the Coast Artillerymen, between whom a friendly but keen rivalry exists, were firing shoulder to shoulder there, the results of these matches cannot be taken as an indication of the relative strength of the teams, for both the Leathernecks and the Artillerymen have a good deal more in their shooting bags than they produced at Wakefield.

Sea Girt may tell a different story, however. The Marines moved on there to join issue with the Army team squad who came on from its training quarters at Fort Niagara, while the Coast Artillerymen have gone straight to Camp Perry. From all indications at the New Jersey Range, both the Leathernecks and the Doughboys are out for blood and there should be some keen competition in the long range events scheduled for this meeting.

Following are official scores received up to time of going to press:

Aug. 20, 1923.

#### NO. 1, THE CAPTAIN RATIGAN MATCH (200 yds. S. F.)

| 105 Entries  | 15 Prizes |
|--|-----------|
| 1. Pvt. Harry L. Nason, USMC.....                    | 49        |
| 2. Cpl. James R. Tucker, USMC.....                   | 48        |
| 3. Lieut. Raymond T. Pressell, USMC.....             | 48        |
| 4. Gy. Sgt. Bill E. Clary, USMC.....                 | 48        |
| 5. 2nd Lieut. Presson E. Conrant, USMC.....          | 47        |
| 6. Maj. W. D. Frazer, CAC, USA.....                  | 47        |
| 7. Capt. James W. Campbell, CAC, USA.....            | 47        |
| 8. Sgt. Robert L. Jennings, USMC.....                | 47        |
| 9. Pvt. Edward Feury, USMC.....                      | 47        |
| 10. Pvt. George D. White, USMC.....                  | 47        |
| 11. Sgt. Edgar J. Doyle, USMC.....                   | 46        |
| 12. Capt. F. S. Sweet, CAC, USA.....                 | 46        |
| 13. Pvt. John Dingle, Co. L, 182nd Inf. M. N. G..... | 46        |
| 14. Sgt. Wm. F. Polver, USMC.....                    | 46        |
| 15. 1st Sgt. Nolan Tillman, USMC.....                | 46        |

Aug. 20, 1923.

#### NO. 2—THE LYMAN MATCH (300 yds.)

| 88 Entries                                | 13 Prizes |
|---|-----------|
| 1. Sgt. T. H. Gasbrouck, USMC.....        | 50 & 10   |
| 2. Cpl. G. L. Sharp, USMC.....            | 50 & 8    |
| 3. Sgt. Otto Bentz, CAC, USA.....         | 49        |
| 4. 2nd Lt. L. L. Lemmitzer, CAC, USA..... | 49        |
| 5. Sgt. Maj. L. P. Cartier, USMC.....     | 49        |
| 6. Pfc. G. D. White, USMC.....            | 49        |
| 7. Cpl. J. J. Dybra, 133rd Co., CAC.....  | 49        |
| 8. Pfc. J. H. Wenson, 187th Co., CAC..... | 49        |
| 9. 2nd Lieut. P. E. Conradt, USMC.....    | 49        |
| 10. Mar. Gun. O. H. Wiggs, USMC.....      | 49        |
| 11. Sgt. E. J. Doyle, USMC.....           | 49        |
| 12. Sgt. R. O. Coulter, USMC.....         | 49        |
| 13. Cpl. J. W. Waldie, USMC.....          | 49        |

Aug. 22, 1923.

#### NO. 3—THE CAMPBELL MATCH (300 yds.) (Corrected)

| 95 Entries                                   | 14 Prizes |
|--|-----------|
| 1. Sgt. O. Bentz, CAC.....                   | 50-26     |
| 2. Lieut. L. A. White, CAC.....              | 50-26     |
| 3. Sgt. E. J. Blade, USMC.....               | 50-20     |
| 4. Sgt. T. H. Gasbrouck, USMC.....           | 50-14     |
| 5. 2nd Lieut. P. E. Conradt, USMC.....       | 50-11     |
| 6. Sgt. E. J. Doyle, USMC.....               | 50-11     |
| 7. Cpl. A. J. Podraza, USMC.....             | 50-8      |
| 8. 2nd Lt. R. W. Crichlow, CAC.....          | 50-4      |
| 9. Lieut. R. T. Pressnell, USMC.....         | 50-1      |
| 10. Capt. M. H. Parsons, 64th Art., USA..... | 50        |
| 11. Pfc. G. D. White, USMC.....              | 50        |
| 12. Cpl. R. Brooks, USMC.....                | 49        |
| 13. Mar. Gun. C. A. Lloyd, USMC.....         | 49        |
| 14. 2nd Lt. L. L. Lemmitzer, CAC, USA.....   | 49        |

Aug. 20, 1923.

#### NO. 4—THE PHELAN MATCH (300 Rapid)

| 35 Entries  | 13 Prizes   |
|---|-------------|
| 1. Spt. G. L. Sharp, USMC.....                    | 50-49-48-46 |
| 2. Sapt. J. T. Campbell, CAC, USA.....            | 50-49-48-4  |
| 3. 2nd Lt. L. L. Lemmitzer, CAC, USA.....         | 50-47       |
| 4. Pvt. F. Hume, Co. L, 182nd Inf., M.N.G.....    | 49          |
| 5. Cpl. J. W. Waldie, USMC.....                   | 49          |
| 6. Mar. Gun. O. Wiggs, USMC.....                  | 49          |
| 7. Cpl. A. J. Podraza, USMC.....                  | 49          |
| 8. Sgt. A. B. Collier, Co. L, 104th Inf. MNG..... | 49          |
| 9. Cpl. J. J. Dybra, 133rd Co., CAC.....          | 49          |
| 10. Cpl. E. Wilson, USMC.....                     | 49          |
| 11. Sgt. S. L. Stephenson, USMC.....              | 49          |
| 12. Mar. Gun. C. A. Lloyd, USMC.....              | 49          |
| 13. Lieut. A. A. Gladden, USMC.....               | 49          |

#### NO. 5—THE CUMMINGS MATCH (500 yds. Rapid)

| 75 Entries   | 11 Prizes |
|--|-----------|
| 1. Sgt. E. J. Doyle, USMC.....                       | 50 & 49   |
| 2. Capt. J. Jackson, USMC.....                       | 50 & 45   |
| 3. Tech Sgt. T. T. Peterson, 110th Co. CAC, USA..... | 50 & 41   |
| 4. Sgt. Otho Bentz, CAC, USA.....                    | 49        |
| 5. Pfc. G. D. White, USMC.....                       | 49        |
| 6. Sgt. R. L. Jennings, USMC.....                    | 49        |
| 7. Cpl. R. Tucker, USMC.....                         | 49        |
| 8. Cpl. E. Wilson, USMC.....                         | 49        |
| 9. Sgt. R. O. Coulter, USMC.....                     | 49        |
| 10. Cpl. G. L. Sharp, USMC.....                      | 49        |
| 11. Pvt. E. Feury, USMC.....                         | 49        |

Aug. 22, 1923.

#### NO. 6—THE MCKENZIE MATCH (600 yds.)

| 101 Entries                             | 15 Prizes |
|---|-----------|
| 1. Lieut. A. A. Gladden, USMC.....      | 50-15     |
| 2. Pvt. E. Meury, USMC.....             | 50-7      |
| 3. Cpl. M. Brooks, USMC.....            | 50-5      |
| 4. Sergt. R. L. Jennings, USMC.....     | 50-3      |
| 5. Capt. W. W. Ashurst, USMC.....       | 50-1      |
| 6. Lieut. Nichols, CAC.....             | 49        |
| 7. Capt. J. I. Ryan, CAC.....           | 49        |
| 8. Sergt. Maj. L. P. Cartier, USMC..... | 49        |
| 9. Cpl. J. R. Tucker, USMC.....         | 49        |
| 10. Capt. R. R. Parsons, CAC, USA.....  | 49        |
| 11. Lieut. M. J. Borden, CAC, USA.....  | 49        |
| 12. Cpl. Val. G. Smith, USMC.....       | 49        |
| 13. Gy. Sgt. Thomas, USMC.....          | 49        |
| 14. Cpl. E. E. Clements, USMC.....      | 49        |
| 15. 2nd Lieut. W. J. Scheyer, USMC..... | 49        |

Aug. 22, 1923.

#### NO. 7—THE LYNCH MATCH (1,000 yds.)

| 95 Entries                           | 14 Prizes |
|--------------------------------------|-----------|
| 1. Cpl. J. B. Tucker, USMC.....      | 50-2      |
| 2. Mar. Gun. C. A. Lloyd, USMC.....  | 49        |
| 3. Sgt. S. L. Stephenson, USMC.....  | 49        |
| 4. Cpl. S. F. Roberts, USMC.....     | 49        |
| 5. Gy. Sgt. J. M. Thomas, USMC.....  | 48        |
| 6. Sgt. E. J. Doyle, USMC.....       | 48        |
| 7. Lieut. L. A. White, USMC.....     | 48        |
| 8. Pfc. J. V. Alexander, USMC.....   | 48        |
| 9. 2nd Lieut. C. V. Crisp, USMC..... | 48        |
| 10. Cpl. R. Brooks, USMC.....        | 48        |
| 11. Cpl. V. G. Smith, USMC.....      | 48        |
| 12. Gy. Sgt. E. E. Clary, USMC.....  | 48        |
| 13. Capt. J. T. Campbell, CAC.....   | 48        |
| 14. Cpl. W. M. Beckett, USMC.....    | 47        |

Aug. 22, 1923.

#### NO. 8—THE RONER MATCH (500 yds. unmarked)

| 79 Entries                            | 11 Prizes |
|---------------------------------------|-----------|
| 1. Mar. Gun. C. A. Lloyd, USMC.....   | 50-19     |
| 2. Sgt. Otto Bentz, CAS, USA.....     | 50-17     |
| 3. Capt. Joseph Jackson, USMC.....    | 50-7      |
| 4. 1st Sgt. N. Tillman, USMC.....     | 50-4      |
| 5. Sgt. E. J. Blade, USMC.....        | 50-2      |
| 6. Mar. Gun. G. Wiggs, USMC.....      | 49        |
| 7. Lieut. S. F. Nichols, USMC.....    | 49        |
| 8. Lieut. W. J. Scheyer, USMC.....    | 49        |
| 9. Pfc. G. D. White, USMC.....        | 49        |
| 10. Sgt. E. J. Doyle, USMC.....       | 49        |
| 11. Capt. C. E. Luckas, CAC, USA..... | 49        |

(Continued on page 18)





# Every-Day Ballistics

## Origin and History of Ballistics

By Major G. P. Wilhelm, Ord. Dept., U. S. Army.

### Part I.

**T**O THE man in the street the word "ballistics" is absolutely meaningless. If, however, he is the possessor of a gun and is a reader of *The American Rifleman* he will know, at least, that this term is applied to the art or science of throwing—not bunk but bullets. Generally speaking, however, there is a vague impression that ballistics is a dry, mysterious and unknown art involving all of the higher realms of mathematics.

The reason for all of this is that books on ballistics usually include a considerable amount of mathematics, physics and applied mechanics. Few writers have attempted to put the subject in such a light that it is readable, as it requires a writer who has had considerable experience with the practical problems, as well as the speaking acquaintance with its theoretical aspects.

In writing the present series an attempt will be made to present readable articles. If they are not interesting enough to be read, they will have failed in their purpose of instructing, as it is impossible to instruct if the material which is used for instructing is so lacking in interest as not to be read.

Up until recently history was considered one of the driest and most uninteresting of subjects. The average man was not interested in it and knew little or nothing about it. Then H. G. Wells came along with his "Outline of History" and made it so interesting that his book sold like fiction and was read like fiction. Of course historians say that H. G. Wells' production is not history, for they say it is too interesting to be true, and if it were really and truly history, it could not possibly be popular.

No doubt the same criticism will be applied to the present articles on ballistics, as if the writer is successful in making them interesting the critics will then say that as articles alleged to be on ballistics they are a joke.

Ballisticians long before the time of the present writer tried to write readable stuff. For instance, Tartaglia, a scientist who lived 400 years ago and who is alleged to be the original designer of the present gunner's quadrant, or clinometer, stated that when a gun had fired several times in succession the interior of the gun had a very violent attractive or suction force, so much so that upon one

occasion he noticed that a little dog was suddenly drawn into the bore of the gun after it had been fired, the dog having by chance been passing by and stopped to smell the muzzle. This is at least very interesting reading, even if it is not exactly in accordance with the most accepted doctrines of interior ballistics. Any way, it shows that dogs have not changed even if the gun has.

In presenting the following series of articles, the writer intends to follow out in a logical order three lines of development.

First, the historical phase, for it is impossible to thoroughly understand present-day knowledge on the subject of ballistics unless a thorough knowledge is obtained of the past and particular of its illusions.

Second, the theoretical aspect of ballistics, from the standpoint of the average man with a gun. These articles will not be for the so-called highbrows and there will be nothing in them which should strain the mental capacity of any one who has had ordinary "readin', writin' and 'rithmetics."

Third, the practical side in which will be covered in a simple way the measurement of all of the elements of the trajectory and how to determine various data by actual firing, if having previously been shown under "Theory" simple ways of making certain calculations regarding the trajectory.

The history of ballistics is the history of one ridiculous fallacy after another, extending even to the present day. Men had the most curious and inconceivable ideas and conjectures regarding the action of missiles in flight. We are not free from some of these absurdities, even at the present time.

For example, very recently there was syndicated throughout the press a news item called "Fastest Things on Earth." It was stated in this article that the fastest thing that is mechanically propelled is the Caliber .30 U. S. Army rifle bullet.

Leaving aside for the moment the fact that there are many types of ammunition and rifles that have a much higher muzzle velocity than the 2700-foot seconds of the Springfield Army rifle, such as the new Remington 3500-foot second cartridge, it was stated as an actual fact that the 1906 bullet travels through space

at the rate of 30.12 miles per minute, and that, if this bullet were fired at a target a mile away, it would arrive at its destination nearly five-eighths of a mile ahead of the crack of the rifle, for sound in air travels only 12.54 miles per minute, much less than half the speed of the bullet.

The pseudo-scientific writer of this bit of mis-information neglected to consider in his problem such a huge force as resistance of the air, which is constantly acting against the projectile from the time it leaves the muzzle of the gun. He should have said that the bullet starts at 30 miles a minute. Actually, the time it takes the service bullet to travel a mile is 4.9 seconds, or nearly 5 seconds. In other words, its average speed over this distance is only 12 miles a minute, and of course during the latter part of its travel is much less than this.

As a matter of fact, instead of the bullet arriving at its destination five-eighths of a mile ahead of the crack of the rifle, the sound of the discharge actually catches up with the bullet and passes it at a range of about 1400 or 1500 yards. So much for modern fallacy.

As has been often stated, mankind early became interested in devices that could either be used to kill one's enemies or made to do one's work. The first ballisticians were the primitive man who tied a thong onto a rock. In his day he must have had much greater prestige than Colonel Ingalls, of the United States Army, who compiled the ballistic tables in use previous to the World War.

This early ballisticians was undoubtedly followed in a few thousand years, according to the biologists, by the precocious youth who changed the thong into a sling and heaved his rock at a friend from a safe distance.

Another brilliant ballisticians of the primeval past was the gentleman who tied a thong to both ends of a stick and called it a bow. He, in turn, was followed by the students of the war and chase who put feathers on their arrows.

History records the first instance of a ballisticians in action as David when he slew Goliath; and if I remember rightly the biblical account of this, he selected a smooth stone. Why did he select a smooth stone? Because he wanted a missile with a good "ballistic co-

efficient."In other words, David must have realized the resistance of the air and wanted a projectile that would easily slip through it at the range he had selected.

One of the very interesting phases of a study of the history of ballistics is the remarkable fact that the early Greek philosophers, astronomers and mathematicians who were brainy enough to lay the foundation of a great many of the modern sciences, and who could even handle such intricate astronomical problems as calculating approximately the relative size of the earth, the sun and the moon, were absolutely at sea regarding the path of a flying missile. They had no conception whatever of the correct flight of an arrow, a stone from a sling, or the huge projectiles of various types which they threw in their numerous hurling machines, such as the catapult and the ballista.

Incidentally, it may be remarked that this is not so greatly to be wondered at. For instance, the writer has stated in a previous article that one of the favorite outdoor sports of the Carthaginians was to hurl, by means of the ballista, the bodies of men, dead horses, etc., over the walls of fortified places. Now it must be considered a very difficult ballistic problem to plot the trajectory of a flying horse through the air, and even down to the present day it has not been possible to obtain the "co-efficient of form" of a flying mare.

As long as the chief hunting implements, as well as the weapons of war, consisted of devices such as the bow, the arrow of which could be easily perceived in flight, it was unnecessary to make any study of the flight, or the path, through the air of missiles. Each man, by personal observation, would correct his aim and make allowances for wind, etc.

In fact, so simple and so efficient is this method that, at the present time, armies are devoting a great deal of research to make bullets, such as tracer and spotlight bullets, which are visible, so there need be no computation or range finding methods involved, each man being his own range finder and sight setter, correcting his fire by observation.

No worth while study of ballistics was made until centuries after the invention and common use of gun powder. However, previous to the use of guns, there were many contests of skill with various types of weapons. The accuracy obtained, considering the range which was often used, compares very favorably with the accuracy and range obtained with the use of firearms for hundreds of years.

In this connection it may be of interest to note some of the alleged feats which were performed with various types of weapons previous to the use of the gun.

The sling, one of the earliest weapons of war, and which is still used by some savages, was actually used in Europe as late as the battle of Sancerre in 1572. The range of the sling was considered to have been 40 to 50 paces (about 35 to 40 yards).

Of the ancient slingers, the Balaric, from an island in the Mediterranean, were in the days of Hannibal, the most feared. They were trained from early youth by being starved until they could hit such small game as birds, rabbits, etc., at a distance. In fact, these

youths became so proficient at this difficult and intricate sport that it would not be surprising to see some enterprising coach of the present day adopt such methods in teaching the young to play golf.

The effective range of the short bow, which was used by mounted men and by the ancients, was from 80 to 100 paces (about 60 to 80 yards), although in some nations a longer range than this was probably obtained, say, 100 to 120 yards.

The short bow was the kind that was used at the Battle of Hastings, 1066 A. D., by both the Normans and the Saxons.

Some of the most efficient throwing machines of the ancients were such implements as catapults, and ballista, which discharged quantities of arrows and stones simultaneously, thus showing the early realization of the importance of the rapidity of fire. Some of these engines were of great size, being large enough to discharge stones sufficiently huge to crush whole ranks of men.

The catapult was generally constructed to shoot sheaves of arrows or hugh javelins and corresponded to our present-day low-angle direct fire. Ranges as great as 600 yards are said to have been obtained by some of these weapons.

The ballista, which threw stones, was said to have attained ranges around 1000 to 1200 yards. It was somewhat analogous to the modern indirect fire, or high angle fire.

Alexander and Caesar in their armies had organizations using these types of weapons very similar to the present-day artillery.

Thus we see that 2000 years ago men were such practical ballisticians that, regardless of the fact that whether they knew the science of the flight of projectiles, yet they were able to make very efficient weapons; considering the lack of mechanical knowledge and inventions and the absolute absence of all facilities and materials.

With our present-day mechanical knowledge and ingenuity and our present-day machine shop facilities, it would be possible to construct a catapult or ballista that would, without doubt, rival a great many of the cruder present-day weapons in range, accuracy, rapidity of fire and character of wound inflicted.

For a thousand years after the days of Caesar, throwing weapons were on the decline. It was not until the middle ages that duplicates of the ancient throwing machines were again being constructed.

The cross-bow, which was greatly superior in ballistic qualities to the short bow as used by the horse archers, but very much inferior for battle purposes to the long bow, was, without doubt, developed from the ancient catapults.

The long bow, which was chiefly used by the English archers of the middle ages, had a rapidity of fire six times as great as the cross bow and probably also could outrange it in effective range, if not in extreme range.

The range of the cross bow was probably around 200 yards and that of the long bow was considerably greater, as is quite evident by laws which were passed in the time of

Henry VIII. (Bluff King Hal, the man of many marriages and the father of Queen Elizabeth).

At that time, which was about 200 years after the invention or discovery of gunpowder, the law required every man between the ages of 16 to 60 to possess a bow equal in length to his height, and in all the towns and hamlets throughout England there was a target range. Every holiday there were competitions and the entrance requirements were very strict. For instance, no man of the age of 21 could shoot at a standing target and none over that age were allowed to shoot at a range less than 220 yards. And remember, that this was the day of the common use of the bow and arrow.

Every man was his own ballistician and from constant practice the range and accuracy of their fire was unbelievably good at the present time.

During the Twelfth-Century a Welsh archer shot an arrow through an oak door four inches thick, so that the head stood out a hand-breadth on the other side.

During the time of King Edward VI a party of one hundred archers entered into a competition, the minimum range of which was 200 yards, and even at that range arrows passed entirely through 1-inch oak planks. While modern archers have in very few instances shot their arrows at ranges as great as 400 yards, it has been authenticated that during the middle ages flight arrows were shot at ranges as great as 600 yards. There is also good evidence to show that in 1795 the Turkish Ambassador with a special Turkish bow and short arrow supported by a curved rest on his left arm, through which the arrow passed, thus compensating for the difference between the draw of the bow and the length of the arrow, was able to obtain a range of slightly less than 500 yards.

In contests between the bow and the gun, the bow usually won. For instance, at Cumberland, England, in 1792, at a range of 100 yards, the bow placed 16 arrows out of 20 into a target, the size of which is not known, while the ordinary British Army musket, the "Brown Bess," was able to put only 12 out of 20.

Archers were used in various armies as late as 1807, during the Napoleonic campaigns in Poland. The cross-bow was used in rural France until 1603, and was last used in war by the Chinese in 1860.

The Japanese, however, hold the record, as in a contest down a long low hall 128 yards long a chap in the 17th Century shot over 8,000 arrows, the length of the corridor in 24 hours, averaging five shots a minute; while in 1852, a modern Japanese archer shot over 5500 arrows in 20 hours, or at a rate of four a minute.

Compare these feats with the number of shots the modern rifleman is able to fire. However, it must be remembered that those men were trained from early infancy and that a man who had no better physique than the average infantryman of today would be unable, without long training, to fire very many arrows.

Coming down to the age of gunpowder, we find skilled investigators paying some attention to the path of projectiles. From the time



of Caesar until the 15th Century, when Galileo, the inventor of the telescope, came along, there were no great physicians. Galileo, who was interested in all kinds of physical problems, having deduced the law of the pendulum from watching the swinging of the great chandelier in the cathedral, considered that when a bullet was fired it first traveled in a straight line and at the end of its path, it was in a straight line, the two being connected by a curve. In medieval text-books these three portions of the trajectory were called "motus violentus," "motus mixtus," and "motus naturalis"; in other words, a violent motion, a mixed motion and a natural falling motion. In a general way, for heavy projectiles, at slow velocities, this is about correct, and is not so far wrong, even for rifle bullets.

The idea that the path of the trajectory at the muzzle was straight and that the fall was not influenced by gravity probably originated the idea of the point blank range, meaning the distance a bullet would travel before it starts to fall, and which is now modified to mean the distance which a bullet will travel before it falls very far.

The medieval ballisticians' idea was that the ball started out so rapidly as to offset gravity, and that when it fell to the earth it would fall along a path corresponding to a steep parabola and at the height of its trajectory it would be a sort of combination of these two movements.

One of the greatest men of genius who has ever lived was Leonardo de Vinci, an all-round man of science, as capable an ordnance engineer as he was a great painter, considered that the trajectory was a curve from beginning to end, which is, of course, true.

Tartaglia, a gentleman we have already mentioned, realized that a bullet would not travel any distance in a straight line unless it were fired straight up or straight down. He also believed in some other things which were not so true, insisting that when two shots are fired rapidly in succession the second will travel further than the first, because the air has been stirred by the first bullet and has been put in motion in the direction in which the shot is being fired. Apparently the idea was that you would shoot a hole through the air and the second bullet would travel down the hole. It might be remarked here that the writer has heard the same theory advanced by an officer during the World War, who had noticed that the first bullet from a Browning machine gun usually struck at a shorter range than successive bullets. The real reason for this is that the gun slightly raises its elevation from recoil after the first shot is fired, and not that there is a hole in the air; inasmuch as air is very elastic and each bullet in a Browning machine gun, at a rate of fire of 600 shots a minute, is 250 or more feet distant from the next one.

Other ideas that are peculiar, to say the least, were quite prevalent. The distance it was possible to shoot was supposed to depend upon the nature of the terrain over which the firing was being conducted. For instance, when firing over water, valleys and such depressions, you were supposed to obtain a

shorter range; for some dark, mysterious and unknown reason and a good gunner was supposed to be able to guess the amount he would have to be able to raise his sights in order to correct for increased effect of gravity.

In some modern text-books, on the corrections it is necessary to make in long-range target shooting, there are some ideas that are almost as absurd. For instance, the effect on elevation of humidity in the air and some other ideas. Such as the effect of the resistance of the air with various amounts of barometric pressure and temperature.

Such a great scientist as Sir Isaac Newton (the man who discovered gravitation) and his followers believed that the resistance of the air was negligible in the case of heavy balls moving rapidly, and that in computations for range it was unnecessary to make any correction or to take in the effect of air resistance.

It was common opinion among the better class of ballisticians of the middle ages that guns recoiled because of the sudden rush of air into the barrel after the bullet had left. Much later it was thought that the recoil failed to start until after the bullet left the barrel, although in the beginning it was commonly held that all force ceased to work on the gun the moment the bullet did leave the barrel. If this were true, of course it would be impossible to shoot a skyrocket.

Such ideas show that the best physicists of that day did not realize the action of the gas which has an equal pressure in all directions.

The ballisticians of several hundred years ago resembled in a great many respects certain of our present-day ballisticians, as he depended almost entirely on dogmatic statements and rarely, if ever, descended to trial and experiment. It was easy to make their mathematics fit what little actual firing they did do by assuming the degree of the violent, crooked and natural motion of the bullet already referred to. Particularly is this true, as it was possible for each ballisticians to decide and select where each motion started and ended.

Men who had made a study of physical laws did not, as a rule, come in direct contact with actual firing, so that the early ballisticians had to depend upon the statements of ignorant men with regard to what actually occurred when a gun was fired. This is not as foolish as it may sound. For instance, one of the first studies that was ever made of interior ballistics was the investigation of Thomas Smith, contained in his book called "The Art of Gunnery," published in 1637. Previously it had been thought that when a gun was fired there was a molecular change in the metal of the gun. Mr. Smith got his information by asking a soldier what took place when the gun was being fired. This particular soldier obtained his information at first hand, by reason of the fact that he was undergoing punishment for infringing of some military measure, such as dead-beating kitchen police, and was sentenced to ride on top of a cannon when it was being fired. The soldier, who must have been a first-class witness, stated that there was no quivering of the metal at the instant

of firing, but that the air that issued out of the mouth and touch hole of the piece "did somewhat astonish and shake him."

It was about this time that a French scientist and artilleryman served to introduce into the French Army the use of mortars and bombs and who was such an enthusiastic investigator that he was killed by a musket ball during a siege as he stuck his head over a trench to observe the effect on the enemy of one of his bombs.

It cannot be wondered at that no ballisticians were developed, considering the early method of firing guns on land and on board ship. It was such a dangerous proposition to fire the guns of those early days that no self-respecting soldier could be induced to do it. Therefore, the practice was to take prisoners and other men undergoing punishment and force them to fire the guns. This, of course, necessitated a guard to see that the prisoner did fire the gun instead of going A. W. O. L. It is said that our present-day artillerymen on land and our present-day marines on sea originated by this practice. The writer is not certain at the present time whether it was the prisoners who later developed into artillerymen and marines or whether it was the men who guarded the prisoners. The evidence all points to the fact that the present artillery and marines must have originated from the guards, as so many guns burst and killed the prisoners that there were not enough left to transmit their art to posterity.

One of the most interesting historical developments in ballistics is the slow evolution of the present-day rifling in small arms and rifled cannon. This rifling must have originated in any one or more of the following ways:

First. It was customary to use feathers on arrows so placed that the arrow would rotate during flight. It was also customary to spin the javelin when hurled, just as the present-day football player in making forward passes and punting, rotates the ball and keeps it point on. From this fact it may have been decided by some observant gunsmith that it must be worth while to spin the musket ball.

Second. Great efforts were made to find a solution of the cleaning problem. Grooves may have been put in the tube of the gun in order to allow space to crowd the powder fouling. Later, it may have been found that these grooves were of value in keeping the bullet point on for some mysterious reason.

Third. In addition to giving space in which the fouling could be forced, there may have been the idea of trying to reduce windage by making the barrel with grooves so that the lead of the ball might be forced by the ramrod into the grooves, thus obtaining a tight ball.

Fourth. Game hunters had the habit of gnawing, biting, or deforming musket balls so as to increase the wound or shock effect. Possibly the idea may have come about that the bullet could be deformed, or made more jagged by merely modifying the barrel with indentations. And last, grooves may have been used merely from centering the ball in the musket so it would be more nearly in the center of the tube.

# American Heavy Caliber Rifles for Large Game

By Townsend Whelen

THE .400 WHELEN

**C**ORRESPONDENCE with large numbers of our sportsmen and riflemen has shown a surprisingly large demand for first-class bolt action rifles taking powerful cartridges of large caliber. In some cases this demand was evidently caused by much reading on the subject of big game shooting, particularly books by British sportsmen. Again quite a few men base their requirements on unfortunate experience with our larger game when using rifles of small caliber. Then, too, we now find an increasingly large number of our sportsmen going to Africa or India for shooting, where heavier rifles than those commonly used and produced in America are a necessity.

A very large number of our sportsmen have in late years imported these heavy rifles from England, being unable to find what they wanted made in America. Now it is difficult for a man to get perfectly suited in a weapon which he orders from abroad. Very generally foreign gunmakers do not understand our requirements, our methods of marksmanship, our field conditions, etc. Foreign rifles do not fit our methods of aiming and holding, nor are they properly adjusted for the ranges at which we usually hunt game. These rifles use expensive ammunition, hard to procure in this country, and very susceptible to climatic changes. The cartridges shoot high in hot climates, and low in cold climates, but the sights on the rifles are not truly adjustable for elevation and windage. The powders used are very erosive and very corrosive. Adjustments as to trigger pull and sling, and dimensions of stock are far from our liking.

Much has been said and written about the excellence of workmanship of British gunmakers, but a careful examination of their best products failed to disclose anything which we could not duplicate, and in most cases do better. Very generally we can improve on their materials through our greater development of all metallurgical science, our skilled toolmakers can do work equal to theirs and certainly our practices in the making of ammunition are far superior. Their hand product is superior to our quantity produc-

tion product—that is but natural. But I saw no reason why we could not produce by hand weapons that were far superior to theirs. True, our skilled labor is more expensive than theirs, but then the protective tariff will more than equalize prices in favor of our product. With our better knowledge of ammunition we should be able to turn out better large caliber cartridges than they do. It appeared to me that it would be interesting to tackle this problem, and to see what could be done in the way of turning out rifles and ammunition superior to any in the world. This study, as indicated by its title, pertains more particularly to large caliber rifles for heavy game.

I did not start out with any idea of turning out the most powerful rifle in the world, or even of beating any particular cartridge. I was perfectly willing to accede to the Britisher his monopoly in elephant rifles. Such rifles have a very limited use. They have decidedly excess power for all big game with the exception of elephant and African and Indian buffalo in thick cover. Rather I aimed at turning out a cartridge of sufficient power for any game other than the above, but one which in accuracy, reliability, absence of erosion and corrosion, availability of supply, possibility of reloading, would be superior to any yet produced.

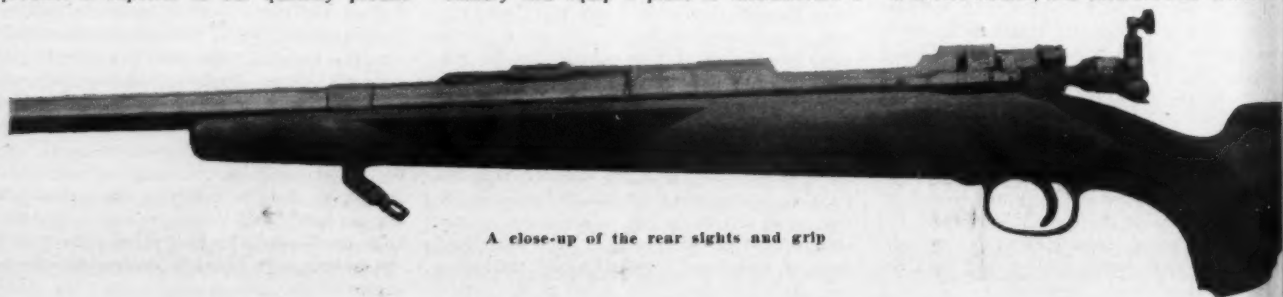
Up to the time that I tackled the problem the .30-06 cartridge was the heaviest adapted to our modern bolt action rifles. The demand, as evidenced from my correspondence was a cartridge for bolt action rifles somewhat like the .405 Winchester, preferably a little more powerful, a little more accurate, a little flatter trajectory. Excessive power was not desirable on account of weight of rifle, heavy recoil, expense, etc. Now when an individual tackles a problem of this kind, and attempts to enlist the interest of men skilled in fine hand production of superior weapons, he is at once confronted with the expense, and this expense is the limiting factor in design.

At the start, therefore, I was limited to a cartridge which could be handled by our existing bolt actions, because to buy the machinery and equip a plant to manufacture a

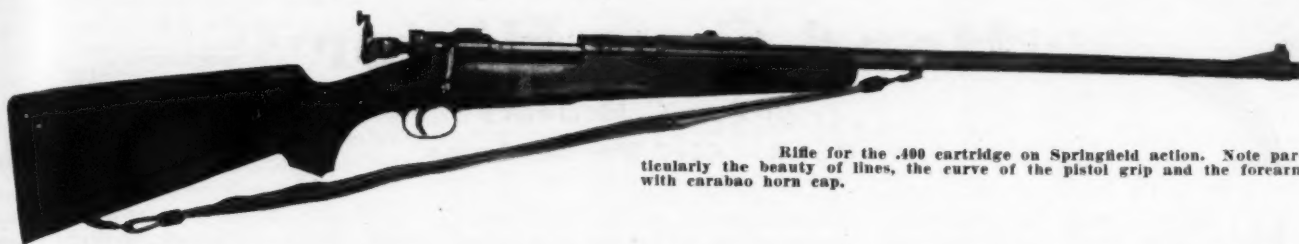
breech action to handle a longer cartridge, or one with a different head would cost probably \$250,000 and as much more before such a plant could get into production. To pay interest and profit on such an investment would require quantity production, and there would need to be a big market to absorb this production, all of which practically defeated one of our purposes—namely, the production of very high class rifles which can only be made by much individual attention to close specifications, workmanship, and the elimination of large tolerances necessary in quantity production. No small factory can possibly compete with the makers of our present bolt actions and breech mechanisms, because they cannot afford to assemble the high degree of knowledge necessary in metallurgy and manufacture.

Practically, therefore, I was limited to a cartridge having a length and a size of head that would function through our Springfield, and Enfield actions, and through Mauser actions of the 8 mm. type. Difficulties were in the way of the importation of Magnum Mauser actions for exceedingly large cartridges, and also in the manufacture of large cartridge cases. But I was exceedingly fortunate in having the .30-06 case to work with. In the process of manufacture this case is practically completed as a straight case like the .405 Winchester, but measuring about .43 caliber at the mouth, and having a rimless head, so that it is easy to neck it down to any caliber below about .41, and then all that remains is to trim it to the correct length, and give it a suitable neck anneal. Of course the case must have a shoulder at the rear of the neck to hold it back against the head of the bolt, and against the blow of the firing pin, thus precluding the use of the straight form of .40 caliber.

The first cartridge that I designed was one of the maximum possible caliber considering the limiting factors of the rimless .30-06 case. This cartridge my friends have insisted in calling the ".400 Whelen." It is easy to say that we just took the Springfield case, necked it to .400 caliber, and used the .405 Winchester



A close-up of the rear sights and grip



Rifle for the .400 cartridge on Springfield action. Note particularly the beauty of lines, the curve of the pistol grip and the forearm with carabao horn cap.

bullet, but really there was a whole lot more involved besides that. First, it was necessary to determine just the right shape of the small shoulder to hold the case back against the bolt head, the taper of body necessary to insure ease of extraction, and the correct diameter of neck to hold the bullet and give that bullet pull which would result in the best initial burning of the powder.

Having designed our case it was then necessary to design and make case dies for shaping the case, which, in their dimensions, had to allow for the spring of the brass. To make these dies requires special reamers, and a great deal of very high skill in die making and tapering. Then came the matter of designing the chamber and of making chambering tools. We wanted a chamber which in its general characteristics would be similar to that of the Springfield, but yet would be most perfect in its alignment with the axis of the bore, and tight at the neck. As much of the bearing of the bullet as possible should project from the mouth of the case, and the throat of the chamber should be such as to center the bullet up most accurately in line with the axis of the bore. These same chambering tools would serve to ream the bullet seating die used in loading the cartridge.

Mr. James V. Howe undertook this work of making dies, reamers, chambering tools, and of chambering the rifles, all in accordance with my design. The results could not have been better. The loaded cartridge inserts, and the fired case extracts with all the ease of the best Springfield used with match ammunition, and the fired cases require very little resizing at the neck only in reloading. There never has been any suspicion of a hang-fire or miss-fire, and as will be noted below, the accuracy is very remarkable for a rifle of this caliber.

But this was not all. A pressure gun and an accuracy gun for use in machine rest had to be made in order that we could tell exactly what we were doing without any guess work. Notice that all this was necessary before we had even fired a shot, and this development work cost well over a thousand dollars in direct labor alone. I have gone into these matters in detail to show riflemen what

a simple little job like this entails if the work is to be done in such a manner as will insure the best results. It seems very simple, for example, for a man to say that he would like to get a rifle chambered for a certain cartridge altered to meet his ideas, and he often sees no reason why it cannot be done at a nominal cost.

At last we were ready to develop a charge and to take pressures and velocities. We chose those powders which experience seemed to indicate would give us the best relation between pressure and velocity, with good accuracy, and the following table shows the results obtained.

TABLE OF EXPERIMENTAL CHARGES .400 WHELEN RIFLE  
300-grain, soft point, Lubaloy bullet—27-inch barrel

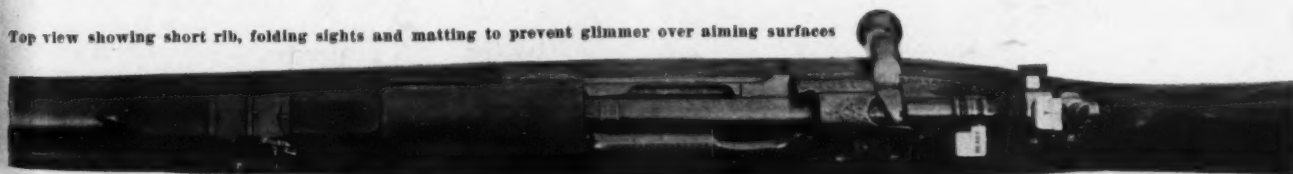
| Powder Kind          | Powder grs. wt. | M. V. f. s. | Pressure Uncompressed | Remarks                           |
|----------------------|-----------------|-------------|-----------------------|-----------------------------------|
| Du Pont No. 16.....  | 53.0            | 2087        | 29,450                | Too low. Large flash.             |
|                      | 60.0            | 2328        | 42,200                | —                                 |
|                      | 63.0            | 2377        | 46,100                | Satisfactory.                     |
|                      | 64.0            | 2439        | 53,500                | Not recommended.                  |
| Du Pont No. 25.....  | 58.0            | 2338        | 47,850                | —                                 |
|                      | 59.0            | 2387        | 52,550                | Not recommended.                  |
|                      | 60.0            | 2138        | 37,050                | Same power as .405 Winchester.    |
| Du Pont No. 17.....  | 63.0            | 2250        | 37,950                | —                                 |
|                      | 66.5            | 2389        | 41,300                | Very satisfactory. Most accurate. |
| Hercules Hi Vel..... | 62.5            | 2439        | 48,500                | Powder lot No. 113.               |
|                      | 57.0            | 2305        | 44,300                | —                                 |
|                      | 58.0            | 2355        | 48,500                | —                                 |
|                      | 60.0            | 2455        | 60,700                | Not recommended.                  |

The most satisfactory charges found were 63 grains of Du Pont I. M. R. Powder No. 16, giving a muzzle velocity of 2377 f. s. with a mean pressure of 46,100 pounds per square inch, and 66.5 grains of Du Pont I. M. R. Powder No. 17½, giving a muzzle velocity of 2389 f. s. with a mean pressure of 41,300 pounds. Both of these charges can be increased half a grain with safety, adding about 25 f. s. to the velocity and about 4,000 pounds to the pressure, but after that the pressures mount very rapidly owing to the compression necessary to get the charge of powder into the cartridge. It seems to me that this increase of 25 f. s. in velocity is hardly worth paying in view of the 4,000 pounds increased pres-

sure. I found the load of No. 17½ powder a little more accurate than that of No. 16. On one day's firing No. 16 did not work quite satisfactorily, the bore being rather heavily plated with a coating of copper. After this first series of experiments we did a lot more firing and experimenting, and were unable to arrive at a better charge than this 66.5 grains of Du Pont No. 17½ powder. No. 17½ powder has never been placed on the market in cannister lots, but has been sold to the ammunition companies who control its loading with pressure gun and chronograph. It is quite similar to No. 16, but has about 3 per cent of a mixture of metallic tin and lead

(Continued on page 17)

Top view showing short rib, folding sights and matting to prevent glimmer over aiming surfaces







# Hand-Gun History



By Roy C. McHenry

## Part 3 - Civil War Handguns

**B**Y 1852 Colonel Colt was on Easy Street. His Mexican War contracts had lifted him from insolvency to affluence and still the orders kept coming in until the modest plant he had fitted up was outgrown. There was a flat of about 250 acres lying along the river front at Hartford, which was only used for pasture, as it was covered each year by the spring floods. This he purchased at a low figure and began to construct a bank of earth to keep out the encroaching waters. Loudly the "wise guys" of Hartford laughed, but the Colonel didn't mind it a bit. The same crowd had stood around and "hoorawed"

him while he was working on his first revolver models, so his dike kept mounting higher and higher and when it was finished, he planted willows in it to hold the earth together. The next spring the pasture was a trifle soppy in spots, but it soon dried off and in a little while factory walls on a scale that had never before been seen in New England were going up where the bossies had grazed the summer previous.

Colonel Colt did not wait to see his factory finished. He had urgent business in England. For some time news had been filtering across the Atlantic that diplomatic rela-

tions among several of the first rate powers were becoming seriously strained. France and Great Britain had a bone to pick with Russia and day by day the outlook for a peaceable settlement of differences grew less. The Colonel must have had inside information, or else he played a hunch, for as soon as he reached London he entered into negotiations, and leased a substantial building in the locality known as Pimlico. Hardly was the ink dried on the lease when machinery began to be unloaded in front of the premises, and as fast as it was unloaded it was taken inside and set up in place. By the time the machinery was installed, a shipload of American mechanics arrived and set the lathes and drills humming, turning out revolvers.

Within a few months the war cloud broke in the Crimea and great fleets of warships and transports headed for the Black Sea. Great Britain ordered 200,000 revolvers from Colt, to be delivered at the earliest possible moment and the workers in the Hartford and London factories went on night shift. Before any deliveries were made, another order, nearly as large, came from the Czar of Russia. With entire impartiality, the Colonel proceeded to fill both orders. The famous Light Brigade, which made its historic charge at Sebastopol, carried in addition to the sabers which are credited with causing the execution in the poem, a Colt revolver apiece, and many of the "gunners" who fought against them also armed with the same weapon.

In 1855, Elisha Root, the superintendent of the Colt factory, took out a revolver in his own name and immediately assigned it to the newly incorporated Colt's Patent Fire Arms Manufacturing Company, of which he became a director. The revolver made under the patent eliminated the weak spot in the Colt design, for it had a solid frame instead of the jointed affair which had been in use up to that time. Unfortunately, Mr. Root took the longest way round to permit the cylinder to be removed from the frame, and had the cylinder pin extract from the back instead of the front of the receiver. It was a highly ingenious mechanism, so arranged that the pin revolved with the cylinder, but it necessitated a side hammer. The pistol functioned well, but people had become accustomed, by this time, to having the hammer in the center, and on this account the 1851 model continued to be the favorite, although the Perfected Model, as Mr. Root's revolver was called, was a well-balanced weapon, shot well and was much stronger in construction than the earlier type. It was made in calibers from .28 to .44, the smaller sizes having sheathed triggers instead of the usual kind with a guard.

A good many other arms corporations had been waiting impatiently for the Colt basic



1. Allen & Thurber Pepperbox, .31 cal.  
2. Remington (Beals) New Model Army Revolver, .44 cal.

3. Remington (Beals) Pocket Revolver, .31 cal.  
4. Warner Pocket Revolver, .28 cal.  
5. Union Arms Co. Belt Revolver, .31 cal.



patents to expire, and many of them had machinery installed, ready to commence production as soon as it was lawful for them to do so. Fordyce Beals, an inventor, of New Haven, had obtained a series of revolver patents, the earliest of which was dated September 26, 1854. By 1858, Remington & Sons and Eli Whitney had made contracts with him, under which they were allowed to manufacture his type of revolver. The first model somewhat faulty in design, but the New Model, as made by the Remingtons, was one of the finest examples of the percussion revolver that was ever produced. It was solid frame, like the 1855 Colt, but the cylinder pin extracted from the front instead of at the rear, and was held in place by the rammer, so that a center hammer could be used. It was made in calibers from .31 to .44, but the latter was the most popular size. During the Civil War, many thousands were manufactured for the Union Army, and the soldiers learned that they could be depended upon to function in spite of mud, rust, dust and all kinds of ill treatment.

The Whitney model was similar in its mechanism to that of the New Model Remington, and during the war was made in the same sizes, although more .31 belt revolvers for officers and .36's for the Navy were produced.

During the war, Beals also granted the right to manufacture his revolver to the Union Arms Company of New York, one of the "war babies" of the period. Its output in the pistol line was .31 five-shot revolvers.

Quite similar in design to the Beals' model was the Freeman revolver, patented in 1862. The inventor was A. T. Freeman, of Binghamton, N. Y., and his contribution to the development of the arm was a two-part cylinder pin. A few of his arms were made at Hoard's Armory, Watertown, N. Y. Later the patent was purchased by Rogers & Spencer, who secured a large Government contract but did not make deliveries until just before the suspension of hostilities. They were .44 caliber.

The first double action revolver made in this country was probably that of Allen & Wheelock, successors of Allen & Thurber, the pepperbox manufacturers. It had the same top snap hammer and mechanism as the pepperboxes, and was made only in the pocket size, 3-inch barrel and .31 caliber. Later a different model was developed. In structure it resembled the solid frame Colt 1855 and like it, had a side hammer. The patented feature of this arm was a movable, trigger guard which geared into a rammer. This revolver was made in pocket size, caliber .31, and also in the navy and army calibers of .36 and .44. When rimfire cartridges came into use, the mechanism was adapted so as to use them and some of the first large caliber cartridge revolvers were of this make.

In 1856, H. S. North, of Middletown, Connecticut, developed a most peculiar revolver which was later manufactured by the Savage Revolving Arms Company, of Middletown. In one respect it was like the old flintlock Collier revolver, for the cylinder moved backward and forward each time it was turned, to

cup over the end of the barrel. It had two triggers, one of which cocked the piece and revolved the cylinder and the other released the hammer. It was a solid frame weapon of ungainly proportions and the hammer lay on the top strap and struck the caps through an aperture in it. The mechanism was delicately adjusted and quite apt to get out of order, but when in proper shape it was capable of doing fine shooting at long ranges. So far as I have been able to learn, it was only made in .36 caliber. It was furnished to some troops during the Civil War but was quickly retired from use, as the mechanism would not stand the racket.

In this same eventful year of 1856, C. S. Pettingill, of New Haven, patented a hammerless revolver which was manufactured by Raymond & Robitaille, of Brooklyn, N. Y. It was exceedingly good to look upon, and well balanced, but the parts of the mecha-

nism were as numerous and as fragile as those of a watch. It was tried out under war conditions and proved a failure. The calibers in which it was produced were .36 and .44.

Two much better double-action revolvers were produced under British patents, the Adams and the Tranter. They are easily recognized by the queer hump back of the hammer, which forms the top of the grip, and which is still a characteristic of British revolvers. The Adams was the less complicated of the two. It was made in pocket, army and navy calibers and a great many were sent over to the Confederates via blockade runners. Late in the war the Massachusetts Arms Company purchased the right to manufacture revolvers of this model.

Another foreign model which possessed real merit was the Mangeot et Comblain Brevet, produced in Belgium. The general outline of the arm resembles that of the English revolv-



1. Rogers & Spencer Army Revolver, .44 cal.  
2. Manhattan Belt Revolver, .36 cal.  
3. Starr Single Action Army Revolver, .44 cal.

4. Starr Double Action Army Revolver, .36 cal., also made in .44.  
5. Mangeot et Comblain Double Action Revolver, .36 cal.

ers, but the mechanism is different. The hammer has no cocking spur on it, as the revolver was double action. Just beneath it was a small bolt, hollowed out on one side, which turned so as to keep the hammer from striking the caps on the nipples, when it was desired to carry it on safety. The revolving mechanism was most ingenious. The bolt stop commonly placed beneath the cylinder was omitted, but the pawl or lifting hand was of unusual length and when raised it fitted into a deep groove in the periphery, holding the cylinder locked in position until after the hammer fell. The piece illustrated is of .36 caliber, but it was also made in smaller and larger calibers. It was also a favorite of the Confederate officers.

The Walch revolver, made in New York City, was patented in 1859 and was a ten-shot arm. It had five chambers in the cylinder, each designed to hold two charges, loaded one over the other, and intended to be fired successively, and two hammers, side by side. This was nothing more than an application of the principle tried out by Lindsay in his two-shot rifles and pistols, a few years before, and multi-shot arms of the same plan had been made even in matchlock days. Like them, the Walch revolver was not a success, although a good many of them in pocket and military sizes were sold.

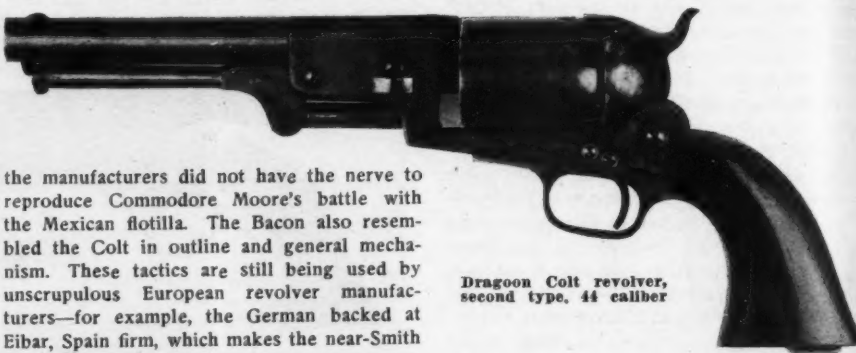
Another revolver used considerably by the Confederates was that invented by Colonel Le Mat, of New Orleans, in 1857. It was manufactured first by him, in his native city, and later, during the Civil War, in France and England. The frame had no top strap, like most of the Colt models, and the cylinder was very large, with eight or nine chambers of .36 or .44 caliber, but the most deadly charge was contained in a smoothbore barrel placed under the rifled one, of shotgun gauge, which was loaded with buckshot. The firing pin on the hammer was movable and arranged to fire either the chambers or the large barrel.

The Butterfield revolver, patented in 1855 and manufactured in Philadelphia, was a clumsy affair with an outline a good deal like that of the antique horse pistols. It was fitted to use the Maynard percussion tape, which operated beautifully until it happened to get a little damp, and then was utterly useless. It was made in the .36 caliber.

James Warner, of Springfield, Massachusetts, who had formerly been an employee of the Massachusetts Arms Company, obtained three patents for revolver improvements and manufactured three different types of percussion revolvers. The first model resembled the Leavitt revolver in outline, as the cylinder axis formed the lower part of the frame, and it had the peculiar side swiping hammer used in that arm. It had two triggers, one of which turned the cylinder and the other released the hammer. The second model was better designed than the first and the relasing trigger was reduced to a mere latch, which tripped upon pressure of the front trigger. Later he produced a revolver of more conventional design, with a center hammer and a solid frame, mostly in pocket sizes. The one shown is of

this model and is of .28 caliber. Warner remained in business for some time, but the demand for his arms was never great. When Smith & Wesson introduced the rimfire cartridge, he also manufactured a revolver to use it, which was a mistake on his part, for they sued him for infringement of their basic patent, obtained judgment and the court directed that all of the arms which he had manufactured on that system which he had on hand should be turned over to the plaintiffs as one of the penalties for the infringement.

Naturally there were many imitations of the Colt arms, some of which so closely resembled them that persons not very familiar with the famous weapons would be easily deceived. The Manhattan Fire Arms Company, of Newark, New Jersey, made a type of belt revolver which required a minute inspection to tell it from the real thing. Even the engraving on the cylinder was followed, although



Dragoon Colt revolver, second type, .44 caliber

the manufacturers did not have the nerve to reproduce Commodore Moore's battle with the Mexican flotilla. The Bacon also resembled the Colt in outline and general mechanism. These tactics are still being used by unscrupulous European revolver manufacturers—for example, the German backed at Eibar, Spain firm, which makes the near-Smith & Wessons which fool so many unwary purchasers. The Cooper revolver, although resembling the Colt arms in outline, was not intended as an imitation. The factory was located at Frankford, Pennsylvania. It was a double-action arm, well made and finely finished, and might have become popular if the firm had had the means to produce it in quantity. It was of two calibers; .34 and .36.

The Colt Company, finding that its side hammer revolver was not as well liked as those of earlier type, tried to improve the 1851 model, mostly by rounding off the octagon barrel and paring down the rear part of the cylinder. The 1860 Army revolver was the model most used by the troops in the Civil War. It was of nominally .44 caliber, although larger in bore diameter than the present .45, and had the old type of jointed frame. As all of the percussion revolvers fouled rapidly and shot wild in that condition, an attempt was made at lubrication of the bullet, by casting it with a circular groove at the bearing point, about a eighth of an inch above the base. This retarded the fouling to some extent and decreased the leading of the barrel quite appreciably. The Army revolver weighed two pounds 11 ounces, and its companion, the 1861 Navy, weighed an ounce less.

A revolver which would have been popular had more care been given to its outward design and balance was the Starr, which was manufactured by the Starr Arms Company at its plants at Yonkers and Binghamton, New York. It was the first example of the top

break revolver, the top strap fastening to the recoil shield by means of a strong lock, which, however, could be easily unfastened, allowing the cylinder to be removed. It was made in two models, single and double action. The mechanical excellence of the arm was offset, however, by the clumsy grip, which did not permit of being held firmly, and the frame was much heavier than it need have been. Several government orders for Starr revolvers were filled, but it was not liked by the soldiers because of its various shortcomings.

The Colt plant at London was sold to an English firm at the close of the Crimean war, but by that time the great factory at Hartford was completed and turning out arms in greater number than had ever been produced before. The Indian Mutiny gave the revolver trade another stimulus, the effects of which had scarcely worn off when the fall of Fort Sumter occurred and the Civil War began.

The year previous to this, Colonel Colt's health began to break down, due to his lack of exercise and too close devotion to his business. At the outbreak of the war he hastened to install a large amount of extra machinery designed for manufacturing single-shot muzzle-loading rifles, of the regulation type of the period, and he also prepared to furnish equipment other than arms, even to military clothing and shoes, without giving heed to the warnings that his physicians gave him. On January 10th, 1862, the end came to this great hearted hero of industry. Ten thousand workmen from the factory turned out to pay him the last honors when he was laid to rest.

Upon the death of Colonel Colt, Mr. Root became president of the company, which continued to supply the Union Army and Navy with arms throughout the war. In 1864 a fire destroyed the original armory buildings. Whether it was the work of an incendiary spy or an accident was never discovered. The ruins were hardly cold, however, before the construction of new buildings was begun.

After the close of the Civil War few, if any, percussion revolvers were manufactured in this country. Several makes of cartridge revolvers were tried out in action and were found to be satisfactory, so the fine old percussion weapons passed into decadence. Of all the arms companies which were operating at that time, but two remain, Smith & Wesson and Colt Patent Fire Arms Manufacturing Co.



# The Trouble With The Trap Shooting Game

**S**EVERAL months ago the entire control of organized trap shooting in the United States was turned over to the amateur shooters, bag and baggage, the tail with the hide, furniture, funds—in short, the whole works, whereat a lot of manufacturers heaved a sigh of relief and sat back to see what would happen. And the reason for the sigh was this:

For years those persons interested in shotgun target shooting able to see farther ahead than the muzzle of the gun or the score they hoped to make in the next shoot, have realized the fact that trapshooting was going down hill. It has not followed the prosperity curves on our graph at all. It has fallen off in tight times, but has not recovered in the flush times, of which the present is an example. As a matter of fact, 1913 marked the high-water mark of the game of organized trapshooting in this country.

There is no use in trying to ascribe this to war times, or later, to the high cost of ammunition, although both had their effect, because it is quite obvious that if a game has much charm for the average shotgun hunter, and he found that the shells were too high in price, he had only to cut down the number he shot to speedily come out at the cash expenditure of the pre-war days. That is, he could with any sane game that didn't call for a programme of 100 shots to even feel that one had been to a trapshoot.

Whenever the question of the troubles of the trap game came up, and the urgent necessity for changes which would not only remove its monotony and long runs, but lessen its cost, the grand old alibi was trotted out, the same being that the nefarious manufacturers back of the game insisted on the present conditions that they might get more shells and more powder and more shot and clay birds used up. So all hands "cussed out" these greedy and grasping manufacturers and let the matter go at that.

The truth was, and always has been, that not a manufacturer in the game outside of one somewhat young and loud-mouthed person in the powder making game in the middle west, lacking in experience, would not heartily welcome a change in the game which would get more men into it, even were the total consumption of shells and birds less than before.

It will probably come as a surprise to learn that the trap game reckons pretty much as a loss to most of the manufacturers concerned in it, outside of some powder makers, and the makers of clay birds—and one of the most bitter critics of the present operation of the game is the largest maker of traps and clay birds—Paul North, of the Chamberlin Cartridge and Target outfit, makers of Blue Rocks and Ideal-Leggett traps.

The handicap to the game lies in the pig-headed, short-sighted, self-seeking handful of influential amateurs who fear to encourage

By Capt. Edward C. Crossman

sane changes lest something happen to overturn their own high standing on the yearly average sheet, which is one of the chief drawbacks to the trap game, incidentally. Every time any change has been suggested, such as cutting down the shot load, or changing the permitted position of the gun, or the angles of the birds, they emitted a series of yelps that would make a coyote sitting on a moonlit hill sound like a nightingale.

And then they'd go out and shoot down 200 shells in a one-day's shoot, and break about 195 out of the 200 birds, and make out a check for \$10 for the shells, and \$6 for the birds, not to mention some entry fee, and claim that it was a grand sport, the sport alluring, the typical American democratic sport where poor and rich rubbed elbows and drank out of the same bottle of bootleg around behind some automobile. Democratic, hell! How does the average man finance such a game, where a one-day tournament is certain to cost him at least \$16, and where a little club shoot of 100 birds sets him back from \$7 to \$9 at Pacific Coast prices?

He doesn't finance it; he lets' it alone, much as he may love the smooth tubes.

He might stretch a point and get out once a month even at \$5 a throw if the game offered to him the intense thrills and the fun and the taking out of himself that he can get for 50 cents or one dollar at a ball game—but can he?

If there is anything much tamer or sadder than the average club shoot, then it must be in the annual knitting championships of the Old Ladies' Home, or watching one end of a chess match held by cable.

A row of five solemn gentlemen line up at their pegs, with talking as much of an offense as whistling would be in a church service, and they then proceed with the ponderous regularity of the machine which makes the clay birds, to break all of them again in the quarter hour they are at the firing line. Breaking a bird does not afford any thrill. Not at all; that is normal with any shoot of even half way decent ability. The thrill comes from missing one, and then—particularly if the shoot is "registered," the thrill is akin to that which you get when the dentist finds the "hot spot" with his little broach.

When the fifteen minutes are gone, and the 25 birds per man have flown their last flight, and the squad stalks solemnly over to see if they can't talk the score keeper out of that lost bird, the budget shows a deficit of \$1.25 for shells, plus 50 cents for birds, plus any other little financial matter such as entry for a slab of bacon nobody wants and which goes to the club shark, of course—anyhow, an average of \$2 for fifteen minutes.

The man who breaks them all hasn't done much; if he breaks 100 hand-runnin' he hasn't set any world on fire. It is done right along

on any old club you can name.

If the trap happens to throw a bird a little high or a little low, or a little too much right or left angle, the yip that goes up shakes the trap house. Nothing must interfere with that solemn business of "breaking them all." After a little study of the badly bitten trap shooter psychology you find that he looks on the game as a pretty solemn, sad sort of business, with few laughs and many heart-burnings, such as a puff of wind which cuts his registered average down one tenth of one per cent.

What he does get, of course, is the companionship of his fellow-men, which is always desirable, but which comes pretty high via the trap route.

Some time ago "Pop" Bruner, the grand old man of Southern California trap shooting, who has now passed on, put on a regular gosh-darn trapshooting test of shotgun shooting ability at the Vernon Gun Club, just to see what sort of shots these boys were, and how much they meant their bluff as to putting more interest in the game. So he screwed up his trap springs until the birds went about 80 yards opened his angles widely right and left, and, I believe, changed his elevations during the score, then he offered a cash prize to the man who could break 80 per cent of them.

Came the day of the shoot, and the ball opened, and there ensued a scene of weeping and wailing and gnashing of teeth, although you and I would have had the time of our lives, not having any reputation to worry about, and merely wanting a good time shooting.

The high man was Stanton Bruner, one of the best shots on the Coast, although then out of practice, and I believe he scored something like 70 per cent of the birds thrown.

It just tickled my old friend Fred Kimble to death because Fred, the inventor of the choke-bore gun, and a great old pigeon shot himself in days gone by, had been saying about the modern trap game, just what this little seance proved.

Dost think that a petition went in to Mr. Bruner to keep up the good work; that the boys had found something devoid of the customary monotony; something that would teach them practical shotgun shooting and appeal to the thousands of non-trapshooting hunters in Southern California something that would give a man plenty of thrills and laughs in, say, fifty birds, not to mention the spectators?

Dost think so? Then has't another think coming, or even two thinks.

Because as one man the real honest and truly trapshooters, who came to the club every Sunday, went to Pop with tears in their eyes and asked him please never to do it again, that it was likely to ruin their style and might chip several birds off the total for the year, duly set down and figured up in the Registered Average.

They didn't give a damn whether or not it appealed to the potential trapshooters of Southern California who would have none of them and their costly monotony, nor yet a damn whether it interested any spectators or might entice some man of little income who'd shoot if he could get kick enough out of it for the occasional "splurge" financially. All they thought about, and all they think about the country over is "breaking them all," their own little preference and their own little importance.

Suggest cutting the shot load down to one ounce, which would let in the smaller and lighter guns automatically frozen out now if a man wants to compete on even terms with the others—and up goes the old yip, it might result in dropping a bird now and then. Suggest keeping the gun down at the hip until the bird flies, and up goes another yip. They couldn't break 'em at 23 yards with less shot or with such a position, and it would wreck comparison of the scores with those of about 1903. Always with their faces to the rear. It boots not whether 23 yards or 22 yards, or any other distance is ever used again, if a change in shot load to one ounce would cut down the monotony of the game, decrease slightly the cost, and attract in the men with the lighter or smaller bore guns, then it is well worth while.

Talk about using a form of trap like Paul North's new one—although I far from approve of their hoggish policy of renting such traps and refusing to sell them—and the yowl goes up that it is not real trap shooting, it is a damn "joker" trap. Always back to the same old line of thought, a rut four feet deep without a break in it—breaking just as many birds as humanly possible with overweight guns, and everything done before the bird flies but giving the gun a twitch and pulling the trigger—and getting as high an average as can be gained on that grand list the Yearly Registered Averages.

Organized trap shooting is all right, provided it is not carried too far, but when it is so darn well organized that a man will refuse to shoot on any grounds other than his own for fear he'll cut down his yearly average in registered shoots, then it is time to disorganize it, and let each shoot stand on its own merits and its own fun. This whole idiocy of registered shoots is akin to the cards you and I used to get when we went to Sunday School. Every Sunday we got a little cheap chromo of a card, and when we got ten of 'em we got a larger chromo, and when at the end of the year we had a perfect score, we turned in our chromos and got a four-bit New Testament—proof of our registered average for the year. All we did was show up—and that's all about that is necessary to get a fair average in the trap shooting game.

I'd rather go out with a 20-gauge and shoot birds thrown from a trap on the top of the hill the way we used to shoot 'em at Glendale than run up .99175 per cent over 3723 birds on their confounded yearly average list. Hells bells, why do we go to a shoot, or the theatre, or the movie, or the ball game? To

run up an average for the end of the year, or to have a good time, as good a time as possible for the hours we spend and the dough we invest, to laugh and to get a few thrills and to come away "re-created," which is the purpose of recreation?

Last year just 9,059 men shot in the registered shoots of the A. T. A. Nine thousand and fifty-nine men shooting in all of the registered shoots the country over, which means that practically every club in the club or the members thereof had a chance to, shoot in one or more of such registered shoots. Many clubs held registered shoots twice a month.

I asked my friend Lou Smith of the Ithaca Gun Co. how many shotgun owners there were in this country, and Lou, without knowing why I wanted the information, said they estimated that there were not less than nine million shotgun owners in this country. And a gun factory ought to be able to make a fair guess. This does not necessarily mean nine million regular shotgun users or hunters. The Government estimates the number of men who hunt as seven million, basing it on the sale of licenses in the various states. A Government estimate is likely to be somewhat optimistic as to the proportion of license buyers to the total number of shooters, but taking the number of states which don't ask any license from the farmers, and the number of farmers who forget to ask any license from the state, and I fancy the seven million might be stretched to still more than this.

Be this as it may, back we come to our piffling little handful of "registered tournament" shooters, which class takes in practically every regular trap shooter in this country. No regular trap shooter misses every one of the registered shoots during the year. Nine thousand against nine million, or seven million or any other number of millions you want to adopt as your figure?

It's no wonder that gun companies don't find it pays to cater to the trapshooters, is it? No wonder that they don't feel like engaging in a game which entails more special orders and more fussing and more returned guns for alteration, and more demands for guns as gifts for supposed influence, and guns at a high discount, than fifty thousand ordinary hunters would entail if they all bought guns at once.

Yet the average trapshooter takes himself very seriously. You'd think his clan took in most of the nine million instead of the nine thousand.

Thus far the 1923 registered averages show just one hundred trapshooters in the grand State of California, which is longer, wider, higher, lower, richer, poorer, hotter, colder and contains more people out to play than any other state in the Union. I can show you more people than this on one public golf links in Southern California any old Sunday morning. Of the noble hundred, 72 of them are in Southern California, leaving some 28 registered gentlemen in the rest of the odd thousand miles of the length of California. And this is the most prosperous year the country has seen in ten years, wages, higher,

living conditions better, more Fords infesting the roads with plain ordinary laboring men at the wheel than the country ever saw before.

How-come, trapshooters, how-come? Do these figures indicate that the game is attractive enough, or that it might need a little change here and there to keep it from fading away entirely?

The financial statement of the American Trapshooting Association, when turning its management over to the Amateurs, dated March 23, 1923, real like this:

#### Contributions to the Association:

|                     |        |
|---------------------|--------|
| Remington.....      | \$6500 |
| Winchester .....    | 6500   |
| Du Pont .....       | 5500   |
| Peters .....        | 3750   |
| U. S. C. Co.....    | 3000   |
| Western C. Co....   | 3750   |
| Hercules .....      | 2750   |
| Amer. Pow. M'ls..   | 1750   |
| Hunter Arms Co...   | 500    |
| Ithaca .....        | 500    |
| Parker Bros. ....   | 500    |
| Chamberlin .....    | 500    |
| Black Products .... | 500    |

Total, \$36,000

The same amount of \$36,000 has been paid in to the A T A or the old Interstate Association each year by those concerns interested in the game.

If you will divide \$36,000 by 9,059 you will get the pleasing answer of \$3.97, which is what the manufacturers paid per head for every man who shot in a registered tournament in 1922.

They don't enjoy it, don't for a moment think that they approve of the present method of running the game, or the present system which freezes out the man of average income, and which shows the grand total of one man for every thousand shotgun owners.

The cold fact is that the game as at present played is monotonous, stupid, frightfully costly, utterly dissimilar to game shooting conditions, and appeals only to the man financially well enough off to be able to afford other pleasures, which he is evidently finding preferable, judging by last year's showing.

The amateur gentlemen ought to keep in mind that any game or any business catering only to the financially well off is going to have hard sledding, there are not enough of 'em. The motor car makers who went broke with the loudest bang last year or two were not the makers of the cars for the common people, they were the makers of cars for the wealthy—of which Lincoln and Locomobile offer the most brilliant examples.

The amateurs are now in full charge, all the lies and alibies about the manufacturers are swept into the discard. Let's see what they are going to do with the game. They've got to do something or it will cease to be.

My own suggestions to them, as a person who has followed the trap game enough to know its weaknesses, are these:

(Concluded on page 17)



# Handloading Ammunition

By  
J. R. Matern



## CHAPTER XXIII

### MAKING AND SWAGING JACKETED BULLETS

IT IS not likely that one handloader in a hundred ever will want to make his own jacketed bullets or will want to swage existing bullets, solid or jacketed, to odd diameters or shapes for purposes of his own. There are emergencies, however, in which such manufacture or swaging is desirable, and it perhaps is comforting to a shooter to reflect that the work can be made, and done by hand, using only hand-made tools and such bullet components as may be obtained anywhere under almost any circumstances.

During the war it was proposed that the Modern-Bond Company furnish the bullet jackets and the dies in which lead cores might be swaged into them, as well as the necessary dies. This project was abandoned, however, because factory-made jacketed bullets became increasingly obtainable; and not only that, but their quality has reached such a high level that we riflemen are busy catching our collective shooting breath after our efforts to raise our skill to an equal level. Observe the present gilding metal jacketed bullets produced by Frankford Arsenal. Observe the wonderful Lubaloy product of the Western Cartridge Company, now available in practically all modern calibers.

It can be taken as a promise, however, that should a scarcity of factory bullets ever again threaten us, Modern Bond and other manu-

facturers will offer shooters the formed jackets and the dies for hand-making bullets for full charge loading of modern high-power rifles.

Meanwhile, the shooter with a rifle of odd caliber still may be unable to find any factory bullet to fit it properly. It may be a foreign rifle. It may be any rifle with abnormal boring. Our American cartridge factories make bullets for every worth-while gun in sight, it seems, and a shooter should scan the products of the factories with great care before deciding that his requirements are not in some unexpected way to be met from standard stock bullets listed in the catalogs or made experimentally. Some unusual combinations can be made to give excellent results.

It is a big job to make jacketed bullets by hand, and not much less of a job to swage those already made. One's time and expense must be disregarded, at least as compared with the costs involved in ordinary buying of factory ammunition or ordinary hand-loading. Despite this handicap a hundred or three hundred or five hundred can be made without prohibitive outlay, and such a number may help out wonderfully when no other source yields ammunition for the particular gun.

Molds for lead cores can be obtained in a number of ways. Yankee Specialty Company and other loading tool makers will supply them, or they can be improvised easily by boring, reaming and polishing out old molds of smaller caliber. They can be made entirely new in a blacksmith shop by boring and polishing if necessary, since exactness is not so important in view of the later swaging which forms the slug true and concentric.

The molded slug of lead has the advantage over a cut slug that it is uniform in weight. It also can be cast with a point which fits into the final shape of the jacket, thus saving much swaging, and tending toward greater accuracy in the final bullets. Wire of lead can be obtained in almost any desired diameter, however, and one can cut this in lengths which will not vary more than three or four grains in weight. To do so mark the sections with a knife edge by precise measuring. Cut down through these marks with a sharp knife or wood chisel and a mallet.

Pure lead is most desirable for a beginner to use. Later on, alloys with higher melting point, containing two to five parts each of antimony and tin, may be used with advantage, particularly for cartridges giving very high velocities.

The jackets may be made from a variety of commercial items. I have seen them made from empty fired cases of rim fire cartridges, and from such cases new and unfired. The 22s, the 25s, the 32s, 38s, 41s, 52s, and 56s and other rim fire cartridges on the market afford an extensive variety. I have seen them made from the ordinary brass cases of center-fire cartridges, both fired and new. And I have seen them made from copper tubing of various thicknesses, notably from some tubing intended for an electrical purpose, having thin walls.

One ingenious shooter melted the lead cores out of a lot of old jacketed bullets, then cleaned and swaged the jackets to his desired shape and diameter.

The reader will observe a great variation in thickness of the foregoing proposed jacket materials. To get the right thickness is one of the very real problems. An examination of the jackets of our best factory bullets show thicknesses of ten one-thousandths of an inch, fifteen thousandths, twenty thousandths, and more. Western Lubaloy jackets opened as this is written were ten thousandths thick, which is all right for that wonderful alloy, but would be for makeshift material. It is likely that in factory practice the exact thickness of bullet jacket is a feature manipulated with a great deal of care in the efforts put forth to obtain bullets of maximum shooting accuracy. The thickness would have to be regulated according to the hardness of the metal anyhow.

In many instances a handloader will have to be satisfied with whatever material is available to him, whether thick or thin. The copper cases of rim fire cartridges are usually very thin and soft. They will distort and tear in the swaging operations, and there is danger that they rupture and tear off the lead core inside them while passing up the gun barrel if subjected to excessive pressures.

In this connection it is interesting and instructive to observe the European factory practice in design of jacketed bullets. Most of our American bullets are intended to be groove diameter for any gun, at least, during the last three or four years. The English system calculates that the lands of the barrel

(Concluded on page 19)



## The American Rifleman

PUBLISHED SEMI-MONTHLY ON THE FIRST AND FIFTEENTH DAYS

By

THE NATIONAL RIFLE ASSOCIATION OF AMERICA

AT 1105 WOODWARD BUILDING, WASHINGTON, D. C.

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### The International Try-Outs.

**I**N 1921 a hastily selected team of seven shooting members was dispatched Lyons to compete in the International Free Rifle Championship. In 1922 a preliminary try-out was held for the team at which 32 shooters reported. In 1923, 16 preliminary try-outs were held in all parts of the country, and a team squad of 30 has been selected who want to train at Camp Perry preparatory to the final selection of a shooting team. Such, in brief, is the report of progress given by the N. R. A. on the selection of riflemen to represent the United States in the International Rifle shooting world.

The hastily selected team of 1921 took the championship from the Swiss for the first time in almost two decades. The teams selected for the small try-out at Quantico in 1922 retained the title, after a heart-breaking trip across Europe.

With a team squad numbering as many as the entire turn-out at the try-outs of last year to select from, with none of the morale breaking experiences of the preceding two years to contend with, and with absolutely the best in the way of rifles and ammunition that an American team has ever been privileged to fire, the United States should, this year, clinch its victory in such an unmistakable manner that the disruption of the Swiss morale, already far advanced from the successive defeats of 1921 and 1922, may be completed.

The Free Rifle game with its highly specialized and high-priced equipment and artificial conditions is not one to appeal to the great body of present or potential American Riflemen. The try-outs for this year, have, however, indicated unmistakably that there are a sufficient number of men in this country interested in the free rifle style of shooting to enable the United States, year after year, to select and build up teams which will be able to retain to this country the free rifle title:—the only rifle championship that has been seriously disputed by foreign riflemen in the past ten years.

### Adding Policemen to the List of Those Who Know How to Shoot

THE ignorance of the average police officer in the proper handling of his weapons have been topics of before breakfast and after dinner conversation among American shooters and American criminals for years. A distinct trend has finally set toward the proper training of officers of the law in the one arm on which they can in final emergency depend for enforcement of the law. The surface has, as yet, been barely scratched, but the results beginning to show are most encouraging.

For a number of years the police in Toledo, Philadelphia, and Detroit have been prominent figures on the Pistol Range at Perry. Last year a police high power rifle club was or-

ganized in New Orleans with a membership of over two hundred of the cities blue-coats. This spring thirty-six officers in Hartford, Conn., affiliated with the N. R. A. as individual members. Just a few months ago the entire Boston police force affiliated in the form of twenty precinct rifle clubs. Now comes word that the police force in Toledo have constructed a Municipal Rifle and Pistol Range which will be used primarily for their own instruction, and the instruction and practice of civilian rifle clubs, and secondarily for the training of any American in Toledo who is interested enough in the enforcement of the law and the preservation of the United States to want to learn to shoot. Toledo has set an example which may profitably be followed by the Department of Public Safety in every state in the Union, and it would appear that the atmosphere at Perry, which has turned many a luke-warm rifleman into a bug, has similarly inoculated the guardians of the law at Toledo.

Finally we have evidence of a definite step forward in police marksmanship in the announcement that the New Jersey State Police will hold an inter-state police match at Sea Girt, New Jersey, immediately following the Sea Girt matches. The entire New Jersey State Police force affiliated with the N. R. A. last year, and has shown unmistakable signs that it is their intention to take advantage of the service which the N. R. A. is able to render. This match, putting the matter of police practice squarely up to the state police organizations in Connecticut, New York, Pennsylvania, and Maryland will, without doubt, go far toward boosting the entire idea of police marksmanship, and Colonel Schwarzkopf, Superintendent of Police, and his able assistant, Major Kimberling, deserve a foremost place in the ranks of men who realize that training in police marksmanship is fully as important to the nation as the training of the National Guard.

### Will Anti-Firearm Laws Stop Suicides?

**T**HERE were forty-one suicides in Berlin during the last week of June, according to police statistics. The figures available for the present month show that so far fifty-two people have taken their own lives. This number does not include persons found drowned.

"Twenty-nine of the June suicides were traceable to troubles brought about by the present conditions of living; others—in several cases double suicides—were due to love troubles. The ages of the suicides ranged from sixteen to seventy-two. Firearms were not used in any of the cases; the prices of guns and pistols are prohibitive."

It is also a fair inference that had these forty-one suicides desired the deaths of others than themselves, they would not have been deterred by the prohibitive price of firearms.



# The Shooters' Magazine

EDITORS

BRIG. GEN. FRED H. PHILLIPS, Jr.

KENDRICK SCOFIELD

T. G. SAMWORTH

Art Editor—CHARLES DUNN

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RECENTLY I had the pleasure of listening to a straight from the shoulder talk by Col. Philip Van Cise. Col. Van Cise is the nationally known district attorney who has so recently taken to a cleaning the crooks of the con ring of the city of Denver. He is a man in every sense. A real He Man who had the guts and the nerve to do what every other man had not dared to do. His words and actions prove that his idea of Americanism, of the Flag, is not the Dollar Sign. Money can not buy him, for if it could he would today be a rich man. And let no person say he is not a rich man, far richer than the tainted dollar could have made him, far richer than he himself may realize. His worth, his value can not be estimated in dollars. His richness is totaled in the words True Patriot, True Americanism. Does the city of Denver realize the debt she owes to this man?

With the Rooseveltian example of Col. Van Cise in mind we are reminded of the power for good and true Americanism the N. R. A. has and which they should use. The N. R. A. is not merely a rifleman's organization, a plaything, but a nationally organized body which has the power to do a great patriotic good.

Shall we allow the country to go over to the mercenary powers and the flag be changed to the dollar sign? Shall we sit quietly by and let the crooks and Reds gradually take us?

No we cannot, we must not. For the debt we owe our ancestors who have fought, died and are buried beneath the sods of the Nation we can not. We must sacrifice ourselves, our own possibilities for the present for the security of the future. We must make the fight and win that we may be lowered into the grave knowing that our boys still have a country, our country and their country and the Flag.

The past we know. The present is unsettled. The future is a question. I am bound and determined that my boys shall live, fight and die, if necessary, under Old Glory. My flag and their flag. I owe it to them. You owe it to your own children or to those of a brother Yank. As a member of the N. R. A. what are you really, actually doing to insure this, our dearest and most cherished wish?

The other day a jury at St. Joseph, Mich.,

## BEYOND THE DOLLAR SIGN An Editorial for White Americans

By Allyn H. Tedmon

hung on the trial of Wm. Z. Foster, one of the greatest enemies to Americanism in the U. S. A. today. He was again turned loose to continue his insidious plotting and planning for the downfall of our government. A couple of the jurors stated that they could find no evidence that he had violated the law. My God, what law do they refer to? The law of Red Russia? Certainly not the law of the United States of America. He did not violate the law. No, he simply tried to overthrow the government and is one of Red Russia's Soviet envoys in our midst. Why shouldn't he be free? He was only doing his duty—for the Reds.

Friends of Foster put a bill through the lower house of the Wisconsin legislature, the purpose of which was to kill the *National Guard of Wisconsin*. The bill went through the House mind you, but thank heavens the Senate contained enough loyal men to kill it.

The State of Colorado for the past number of years has enjoyed profound peace. No strikes, no uprisings by labor or otherwise. The reason being that a state police force had been created and brought into being. This arm of the law, this touch of the authority of the state had kept the disturbing elements in a protested restraint. Trained men, few in number, but trained to their duty, held in check the elements who hated them, and the authority of the state which they represented. Yet with this fact acknowledged the people elected for Governor a man who promised to kill the Rangers, the state police force. And what's worse he did it, and Colorado now again stands open to all men like Foster and his ilk, to come in and foment trouble.

Among the other things so dear to the Reds heart and that we may thank them for is, that they caused the Haymarket riot in Chicago. They assassinated President Wm. McKinley. They shot Col. Theodore Roosevelt. They dynamited the Times building in Los Angeles. They threw a bomb into a parade out on the coast and another killed a score of people in

Wall Street. And last year they have won another "great victory" at Herrin, the Herrin massacre, the blackest blot of all. Foster called it a victory and thanks to the jury of St. Joseph, Mich., he is again at large.

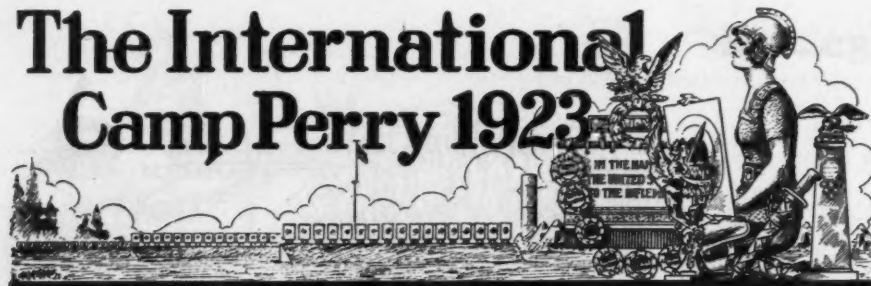
The Reds are insisting on the enforcement of the Sullivan law. They lobbied the anti-pistol bill into Congress and wept bitter tears when it sunk from sight in committee.

The one thing I am most thankful for is that I am a Yankee. One of the old Americans as Chauncey Thomas calls us. Like he and many, many others my ancestors have, lived, worked, fought and died that this great Nation might exist. The honored names and loyal deeds of Washington and Roosevelt, the hallowed existence of the immortal Lincoln are our cherished heritages. Are we to lay quietly by and allow this insidious serpent to devour our birthright?

We can make the preservation of this nation sure by setting an example and training our sons for their parts as future citizens. Our boys and girls must make the fight of tomorrow. And it is up to us as citizens, as loyal Americans, to make absolutely sure that they will make that fight under the Stars and Stripes and not the Red flag of anarchy.

Is your membership in the N. R. A. merely the donation of \$2, and the opportunity of purchasing Federal arms and equipment? Is your rifle club merely for the pastime of rifle shooting? If these things be true, then in my mind the N. R. A. as an organization is not fulfilling its whole mission. To my mind our duty is broader; it is a nationally important mission. No rifle club should fail for something to do or lack of interest. There is much to be done, and much to be done should be done by and through these rifle clubs and the individual members. What's the use of learning to shoot if you don't care what flag you are shooting under? The mere banging away at a bulls-eye eventually gets stale, but what of the important duty before us, why not have a committee at work on it and thus keep a real interest for winning a real fight, a fight in the dark, and the possibility of doing a real lasting good. As I see it, the duty is ours, as individual members and as an organization. We must not shirk it. We must perform it. What say you, men?

# The International Camp Perry 1923



## These Reduced Rates

**R**AILROADS granted a reduced rate to Camp Perry last year, but there were not enough certificates turned in to enable the men and women holding the certificate to obtain a special fare home. Ample notice of the special fare has been given through the columns of this magazine, and by circular letters to all members of the Association and affiliated clubs, so that there should be no question but that the required 250 certificates will be turned in this year.

The important facts to bear in mind are that certificates may be obtained in any point where the one-way fare exceeds \$0.67, that they may be obtained for all dependents of the shooter as well as for himself, and that there must be 250 certificates turned in in order for anyone to get the special rate home. The answer is for every person attending Camp Perry who can possibly take advantage of this rate to obtain certificates. Shooters living nearby will be inclined to think that it is foolish to bother with one of these certificates merely to save a few cents. They may be afraid that they will look cheap, but it must be borne in mind that there will be shooters at Camp from points as far distant

as Oregon and Florida who are depending on these special rates home, and they will not be able to get them unless 250 certificates are turned in. No matter where you live, get a certificate when you go to Camp.

## Police at Perry

**T**HERE should be some real rivalry at Perry this year outshadowing in its own circle the Infantry Marine Corps wrangle. There will be more policemen at Camp Perry for participation in the School of Instruction and Matches than have ever been before, and chief among the battlers will be those from Toledo and Buffalo, while three new outfits representing the three corners of the United States will be on hand to add to the festivities.

Portland, Oregon, is sending down a complete team. New Orleans, Louisiana, is sending two teams, and the Delaware and Hudson Railroad Police of New York State will send one or two teams. These, in addition, to numerous individual officers or Sergeant Instructors are being sent from various departments. What has your Department of Public Safety done about it this year? If they haven't done anything, now is the time to start getting them ready for next year.



**KIT CARSON**, prince of frontier scouts, in bronze miniature, will be the trophy awarded in the Small-Bore Wimbledon Match. This trophy is the gift of the Winchester Repeating Arms Company. The event calls for 20 record shots at 200 yards with any .22 caliber rim fire rifle.



## THE PETERS TROPHY

A handsome cup presented by the Peters Cartridge Co., Cincinnati, Ohio, for competition at the Annual Small-Bore Matches of the National Rifle Association.

Awarded to the winner of the Individual Long Range Match, a competition calling for 20 shots at 175 yards.

## Final Try-outs

**F**OR the benefit of riflemen who are unable to attend the preliminary try-outs to be held in the various corps areas, another try-out will be held during the first week of the meeting at Camp Perry. Riflemen desiring to try for a chance on the team should report at Perry not later than Monday, September 3d. Successful competitors in the Camp Perry try-outs will be assigned to the team squad in the same manner that men from the corps area try-outs have been assigned, and those who are successful in making the team will have their transportation refunded them by the N. R. A.

## Dewar Medals Received

**I**F THE American Small-Bore Team does not win the DeWar trophy this year the N. R. A. will be out a considerable sum of money, as the sterling silver medals for the winning team have been ordered and received from abroad so that they may be issued at Camp Perry just as soon as the announcement is made that the Americans have won. If Col. Stodters' warriors come through again this year the N. R. A. of Great Britain will denote the medals but if we lose there will be nothing to do but pay for them. Small-bore shooters who appreciate service will have an opportunity to show it this year by winning the DeWar in their usual form.



(Concluded from page 7)

So much for the cartridge. Now we come to the design of a rifle to use it. We had two excellent bolt actions available, the Springfield for those who were members of the N. R. A. and the Mauser for those who are not. It seemed desirable that the completed rifle should weigh 9 pounds, as a lighter rifle would give uncomfortable recoil, and would probably be lacking in fine accuracy. This limited the weight and exterior dimensions of the barrel. The design of the rifle really represents the highest development in a proc-

Each rifle produced by Griffin & Howe is given a most thorough range test, both for accuracy and to determine sight adjustment.

At the present writing, this .400 rifle and cartridge, so far as I know, has not been tried on game. For such data we will have to wait until the end of the coming hunting season. That it will be a splendid killer is guaranteed by its characteristics. By carefully reviewing the work of a large number of English rifles of slightly lighter bullet, slightly smaller caliber, and slightly lower velocity, we can state that without doubt it will have excellent killing power on all African game except elephant and buffalo in heavy cover, for which an elephant rifle is desirable. It should do excellent work on buffalo in fairly open country, and it should be ideal for lion. I personally believe that it has excess power for any American game, that even the .30-06 has excess power, but my correspondence shows that not all of my friends agree with me, and for these the .400 should prove ideal for moose and Alaskan brown bear—our heaviest game.



The very best material were specified everywhere, and each minute detail was given special attention. For example, the trigger pull is exactly right—3½ pounds with no suspicion of creep. The sights are correctly zeroed and marked. The gunsling is made just right, and is already softened with oil. The bolt and bearing surfaces of the mechanism are polished so that they work "slick as grease." Balance and beauty of outline were given more attention than has ever heretofore been devoted to a rifle. A special design of engraving was drawn up which would be rich without being gaudy—just enough of the con-

A novice would characterize the recoil as "heavy." A seasoned rifleman will not be bothered by it. It is about the same as that of a 7½ pound, 12 gauge shotgun with stiff trap loads. If one fires much with it in the prone position a slight padding of the elbows and shoulder is desirable. I have fired the rifle as many as 50 rounds in a day without any padding, and have never had any indication of bruise. It is most decidedly not a

(Concluded from page 12)

- I fancy that these conditions may knock the spots off that grand old clay bird grinding game we are now bucking, make the sport a little more worth seeing, breaking a bird a little more of an accomplishment, let in the field guns and the smaller bore guns, decrease the cost per shot, and the number of birds necessary to have a little fun.

This is a step in the right direction. Why not keep on walking, even if we have to kill off a few of these stiff-necked, hard boiled birds who wouldn't change the dotting of one "i" in the sacred conditions of the badly fading old trap game? Any game is better than a dead one.

## Wakefield Opens 1923 Season

(Concluded from page 2)

Aug. 22, 1923.

## NO. 9—THE LOGAN MATCH (600 yds.)

| 85 Entries                                  | 13 Prizes |
|---|-----------|
| 1. Cpl. W. M. Beckett, USMC.....            | 50—5      |
| 2. Sgt. R. L. Jennings, USMC.....           | 50—3      |
| 3. Sgt. E. J. Doyle, USMC.....              | 49        |
| 4. Cpl. L. Petroskey, USMC.....             | 49        |
| 5. 2nd Lieut. C. F. Crisp, USMC.....        | 49        |
| 6. Cpl. S. P. Roberts, USMC.....            | 49        |
| 7. Capt. M. B. Humphrey, USMC.....          | 49        |
| 8. Pvt. H. L. Nason, USMC.....              | 49        |
| 9. Mar. Gun. C. A. Lloyd, USMC.....         | 49        |
| 10. Sgt. Edgar W. King, CAC.....            | 49        |
| 11. Sgt. William Brattin, Co. E, 101st Inf. | 49        |
| 12. Pvt. Edward Muse, Co. E, 182nd Inf.     | 49        |
| 13. 1st Sgt. N. Tillman, USMC.....          | 49        |

Aug. 22, 1923.

## NO. 10—THE BEACH MATCH (Snipers)

| 57 Entries                         | 8 Prizes |
|------------------------------------|----------|
| 1. Sgt. R. L. Jennings, USMC.....  | 50       |
| 2. 1st Sgt. N. Tillman, USMC.....  | 50       |
| 3. Cy. Sgt. B. E. Clary, USMC..... | 49       |
| 4. Cpl. S. P. Roberts, USMC.....   | 48       |
| 5. Sgt. E. F. Molzhauer, USMC..... | 48       |
| 6. Mar. Gun. O. Wiggs, USMC.....   | 48       |
| 7. Pvt. E. Feury, USMC.....        | 47       |
| 7. Cpl. W. W. Beckett, USMC.....   | 47       |

Aug. 22, 1923.

## NO. 15—THE COOLIDGE MATCH (800 yds.)

| 40 Entries                                  | 6 Prizes |
|---|----------|
| 1. Maj. C. Stanchfield, Ord. MNG.....       | 49       |
| 2. Sgt. Robert Castle, Co. F, 101 Inf.....  | 49       |
| 3. Capt. Wallace Darling, CAC, MNG.....     | 48       |
| 4. Lieut. James Tourtliott, Co. D, 182 Inf. | 48       |
| 5. E. E. Hickey, Wakefield.....             | 48       |
| 6. Isaac Langille, Middlesex Rifle Club.... | 48       |

Aug. 22, 1923.

## NO. 17—MILITARY ORDER WORLD WAR MATCH (Bull's-eye at 500 yds.)

| 40 Entries                                   | 6 Prizes |
|--|----------|
| 1. Lieut. G. F. Nichols, CAC, USA.....       | 19       |
| 2. Sgt. Robert Castle, Co. F, 101st Inf..... | 11       |
| 3. A. S. Sprague, Wor. P & R Club.....       | 9        |
| 4. Cpl. Oscar Smith, CAC, USA.....           | 8        |
| 5. Pvt. Frank Hume, Co. L, 182nd Inf.....    | 8        |
| 6. Capt. Wallace Darling, CAC, MNG.....      | 7        |
| 7. Maj. W. S. Fulton, CAC, USA.....          | 7        |

Aug. 22, 1923.

## THE MARINE CORPS LONG RANGE TROPHY MATCH (K)

| Entries                                       | 5 Prizes |
|---|----------|
| 1. Sgt. Herbert Whittemore, Co. L, 101st Inf. | 43       |
| 2. Egt. Clarence Landry, Co. F, 182nd Inf..   | 41       |
| 3. 1st Sgt. J. C. Spraker, Co. L, 182nd Inf.. | 38       |
| 4. Lieut. James Tourtliott, Co. D, 182nd Inf. | 34       |
| 5. Geo. L. Cutting, Wor. P & R Club.....      | 34       |

Aug. 22, 1923.

## THE MARINE CORPS LONG RANGE TROPHY MATCH (K)

| Entries   | 2 Prizes  |
|---|-----------|
| Two-Man Team at 600 and 1,000 yds.                      | Agto.     |
| 1. 2nd Lieut. W. J. Scheyer, Capt. H. K. Pickett, USMC  | 91 92 183 |
| 2. Capt. M. H. Parsons, Sgt. Jas. Wertzberger, CAC..... | 94 89 183 |

## INDIVIDUAL PISTOL MATCHES

## Match No. 1, Aug. 21, 1923—2 Prizes

| 1. Lt. W. J. Whaling, USMC..  | 94 | 94 | 89 | 277 |
|-------------------------------|----|----|----|-----|
| 2. Pvt. H. C. Walker, USMC..  | 88 | 93 | 89 | 266 |
| 2. Lt. C. H. Vogel, CAC, USA. | 87 | 95 | 84 | 266 |

## Match No. 2, Aug. 21, 1923—2 Prizes

| 1. Gy. Sgt. Leo Peters, USMC. | 94 | 92 | 86 | 272 |
|-------------------------------|----|----|----|-----|
| 2. Pvt. H. C. Walker, USMC..  | 93 | 93 | 81 | 267 |

## Match No. 3, Aug. 22, 1923—2 Prizes

| 2. Pvt. Fred Krause, USMC.. | 91 | 94 | 82 | 267 |
|-----------------------------|----|----|----|-----|
|-----------------------------|----|----|----|-----|

## Aug. 21, 1923, Pistol Team Match—5 Men

|                             |     |     |     |      |
|-----------------------------|-----|-----|-----|------|
| 1. Marine Pistol Team No. 1 | 447 | 429 | 381 | 1257 |
|-----------------------------|-----|-----|-----|------|

Aug. 22, 1923.

## Four-Man Team at 200-300 R &amp; 600

| 22 Entries               | 2 Prizes         |
|--------------------------|------------------|
| 1. US Marine Team H..... | 200 300R 600 Ag. |
| 2. US Marine Team J..... | 180 191 187 558  |
|                          | 173 193 190 556  |

## Results of the International Tryouts

By C. B. Lister

RIFLE shooting entered on a new era in the United States on the 13th of August, when the first nation-wide regional try-outs for the selection of an American International Rifle team were held under the auspices of the National Rifle Association, through the hearty co-operation of the War Department and Corps Area Commanders. In 1921, an invitation was received by the NRA to send an American team to compete in the revived International Free Rifle Matches. It was necessary to select a team from marksmen of known ability, and dispatch them without preliminary training.

In 1922, a team try-out was held at Quantico and was attended by 32 competitors. To say that 34 men have already been directed to report to Camp Perry for the actual Team Squad this year speaks volumes for the manner in which the free rifle game has been adopted by the American shooters. The free rifle sport is at best grafted onto the Americans' shooting intellect. At heart, they prefer the long range or rapid fire game, as it has been played in this country for years, but the Europeans were claiming the world's championship with the free rifle without Americans in the competition. So there was nothing to be done but adopt the European system and beat them at their own game. To those who are familiar with the heart-breaking experiences of the American team in 1921 and 1922, particularly in the latter year, it is known beyond the shadow of a doubt that nothing else except this will to win and beat the other fellow at his own game has been responsible for our two consecutive victories. So, having adopted the free rifle as an auxiliary to the service rifle and small-bore rifle, the American rifleman is playing it in the only way that he knows how—with all his might—and the results of the try-outs this year have developed a feeling of assurance that, barring adverse weather conditions, a new world's record will be established by the American team for the Continental exponents of the free rifle to shoot at for a long time to come.

There is a second phase to this year's try-outs which must not be overlooked. The Olympic matches take place in France next year. It is true that these matches include service rifle as well as free rifle events, but the Continental style of shooting predominates, and on the basis of what the contestants in this year's try-outs have learned, plus the interest that has been aroused in clubs all over the country, America is assured that in the 1924 Olympics her riflemen will as ably uphold the Colors as will the track and field athletes. Indeed, it is not expecting too much to think that the Americans may make a clean sweep of the rifle events on the Olympic program.

The successful candidates who have been ordered to Camp Perry for further training and selection are as follows:

## U. S. Army

Captain A. R. Brian, 42nd Infantry  
 Captain J. W. Thompson, Infantry  
 Captain W. P. Waltz, Infantry  
 Captain E. G. Lindroth, 2nd Infantry  
 Captain J. P. Lyons, Infantry  
 Captain T. F. Wessels, Infantry  
 Captain C. W. Chalker, 38th Infantry  
 1st Lt. A. D. Rothrock, 29th Infantry  
 1st Lt. A. M. Siler, 16th Infantry  
 Sgt. Frank Iorger, 1. S. D.  
 Pvt. 1st Class, Dennis Fenton, 28th Infantry

Major J. K. Boles, Ames, Iowa  
 Major J. Plassmeyer, Fort Des Moines, member Cavalry Team Squad  
 Captain F. J. Pearson, Inf., Fort Benning, Ga.

Captain Fred Berger, Q. M. C., Camp Lewis, Wash.  
 1st Lt. H. C. Barnes, Jr., C. A. C., Wakefield, Mass., member Coast Artillery Team Squad

## U. S. Navy

Commander C. T. Osburn, U. S. N.  
 Lt. Commander E. E. Wilson, U. S. N.  
 Lt. Commander A. D. Denny, U. S. Marine Corps  
 Captain J. Jackson  
 Marine Gunner C. A. Lloyd  
 Sergeant Morris Fisher

## National Guard

Lt. Col. Milo D. Snyder, Ord. Dept.  
 Indiana National Guard, Cromwell, Ind.  
 Pvt. Joseph W. Crockett, D. C. National Guard, East Falls Church, Va.

## Civilians

C. T. Carney, Des Moines, Iowa  
 A. F. Goldsborough, 2136 Glenn Ave., Pasadena, Cal.  
 E. N. Moor, Jr., 53 Page St., San Francisco, Cal.  
 A. E. Smith, 393 Motor Route "A," Sacramento, Cal.  
 J. P. Becker, Dundas, Minn.  
 C. V. Schmitt, 3601 Bryant Ave., Minneapolis, Minn.  
 Walter R. Stokes, Clifton Terrace, Washington, D. C.  
 Lawrence Nuesslein, 1117 14th St., Washington, D. C.

An additional try-out will be held during the latter part of the first week at Camp, when additional men who were unable to attend both the preliminary try-outs and the matches will have an opportunity to earn a place for themselves on the International Squad. Rifles will be available for issue to men who are not equipped with their own guns.



# Smallbore Championships Closely Contested

**I**n a series of the most closely contested outdoor small-bore matches in the history of the association, L. J. Corsa, New York City, emerged victor in the one hundred-yard individual championship in the N. R. A. Individual Championship, representing the aggregate scores of the fifty and one hundred yard events and in the Small-Bore Grand Aggregate covering the aggregate of the fifty and one hundred and two hundred yard matches. Corsa's score in the one hundred yard individual was 396. It was equalled by Dr. Emil Schwegler of Janesville, Wisconsin, but the usual hard luck failed to follow Corsa in this event and he outranked Dr. Schwegler on the strength of the fact that the lowest shot in Corsa's string was a nine, while the lowest in Dr. Schwegler's was an eight. The same two were at it in the individual championship. Corsa turned in 792 against Schwegler's 791. In the small bore grand aggregate Dr. Schwegler dropped four points at two hundred yards while Corsa dropped but two. The latter's aggregate being 890 and Dr. Schwegler 887. The two hundred yard individual championship fell to Gabriel Ludvikson of Libby, Montana, with a possible score which ranked possibles turned in by J. R. Moser of Dayton, Ohio; Hugh Nelson of Pasadena, California; M. L. Bonta of Wilmington, Ohio; C. S. Neary of Bridgeport, Connecticut; D. W. Price of Iowa City, Iowa; E. F. Burkins of Wilmington, Delaware; L. Bonquois of New Orleans, La.; and Ben Schlagheck of Kings Mills, Ohio; all of whom finished in the order given. The ranking in this match was established by the number of Vs made.

The entry list in the individual small-bore matches was unusually heavy this year and materially indicates the steady growth of the small-bore game in this country.

Corsa used a BSA rifle with Fecker telescope and Remington Palma ammunition in all of the matches. Dr. Schwegler used a BSA rifle with US N. R. A. ammunition and used the Winchester 5-A scope. Ludvikson, in winning the 200-yard event, used a Winchester 52 with Precision ammunition, while the other eight possibles turned in showed a total of one Stevens, one Peterson Stevens, one Springfield, one Remington, and four Winchester 52s. Three of the competitors used US N. R. A. ammunition, two used Remington Palma, one Precision 200, and one Peters tackhole and one unspecified. The high iron sight prize in this match was won by Mr. Bonquois, who fired the Winchester 52 as issued and US N. R. A. ammunition.

The official bulletin giving complete results will be mailed to all N. R. A. members.

A tabulation of the winners in each event follows.

## MATCH NO. 4—100-YARD INDIVIDUAL

|   |     |
|---|-----|
| L. J. Corsa, New York, N. Y. ....           | 396 |
| Dr. Emil Schwegler, Janesville, Wis. ....   | 396 |
| H. C. Wood, LaJosa, Pa. ....                | 394 |
| A. A. Kull, Janesville, Wis. ....           | 393 |
| C. E. Stodter, Washington, D. C. ....       | 393 |
| John Beedle, Kings Mills, Ohio. ....        | 392 |
| Stanislas L. Simard, Bridgeport, Conn. .... | 392 |
| Edward L. Crabb, Shoshoni, Wyo. ....        | 391 |
| E. S. Hooe, Columbus, Ohio. ....            | 391 |
| 1st Sgt. H. K. Mann, Camp Dix, N. J. ....   | 391 |

## MATCH NO. 5—N. R. A. INDIVIDUAL CHAMPIONSHIP

|   | 50<br>yds. | 100<br>yds. | Total |
|---|------------|-------------|-------|
| L. J. Corsa, New York, N. Y. ....         | 396        | 396         | 792   |
| Dr. Emil Schwegler, Janesville, Wis. .... | 395        | 396         | 791   |
| A. A. Kull, Janesville, Wis. ....         | 395        | 393         | 788   |
| T. K. Lee, Birmingham, Ala. ....          | 397        | 390         | 787   |
| H. A. Rich, Pasadena, Cal. ....           | 398        | 388         | 786   |
| F. E. Border, West Bend, Iowa ....        | 395        | 390         | 785   |
| G. L. Cutting, Worcester, Mass. ....      | 396        | 388         | 784   |
| Howard Clark, Kings Mills, Ohio ....      | 394        | 389         | 783   |
| E. L. Crabb, Shoshoni, Wyo. ....          | 392        | 391         | 783   |
| C. E. Stodter, Washington, D. C. ....     | 390        | 393         | 783   |

## MATCH NO. 6—200-YARD INDIVIDUAL

|   |     |
|---|-----|
| Gabriel Ludvikson, Libby, Montana. .... | 100 |
| J. R. Moser, Dayton, Ohio. ....         | 100 |
| J. R. Moser, Dayton, Ohio. ....         | 100 |
| Hugh Nelson, Pasadena, Cal. ....        | 100 |
| M. L. Bonta, Wilmington, Ohio. ....     | 100 |
| C. S. Neary, Bridgeport, Conn. ....     | 100 |
| D. W. Price, Iowa City, Iowa. ....      | 100 |
| E. F. Burkins, Wilmington, Del. ....    | 100 |
| L. Bonquois, New Orleans, La. ....      | 100 |
| Ben Schlagheck, Kings Mills, Ohio. .... | 100 |
| W. H. Sletzer, Cleveland, Ohio. ....    | 99  |

## MATCH NO. 7—SMALL-BORE AGGREGATE

|   | 50<br>yds. | 100<br>yds. | 200<br>yds. | Total |
|---|------------|-------------|-------------|-------|
| L. J. Corsa, New York, N. Y. ....         | 396        | 396         | 98          | 890   |
| Dr. Emil Schwegler, Janesville, Wis. .... | 395        | 396         | 96          | 887   |
| F. E. Border, West Bend, Iowa ....        | 395        | 390         | 99          | 884   |
| H. A. Rich, Pasadena, Cal. ....           | 398        | 388         | 97          | 883   |
| A. A. Kull, Janesville, Wis. ....         | 395        | 391         | 94          | 882   |
| E. L. Crabb, Shoshoni, Wyo. ....          | 392        | 391         | 98          | 881   |
| T. K. Lee, Birmingham, Ala. ....          | 397        | 390         | 94          | 881   |
| Curtis Liston, Johnstown, Pa. ....        | 391        | 390         | 99          | 880   |
| John Beedle, Kings Mills, Ohio ....       | 391        | 392         | 97          | 880   |

## PISTOL MATCH NO. 2—RAPID FIRE

|   |     |
|---|-----|
| W. S. Maxwell, Los Angeles, Cal. ....     | 526 |
| W. L. Darling, Boston, Mass. ....         | 477 |
| William McNamee, Jacksonville, Fla. ....  | 455 |
| Norman M. Hill, Jacksonville, Fla. ....   | 420 |
| T. B. Noble, Jr., Indianapolis, Ind. .... | 375 |
| Frank M. Hodges, Jacksonville, Fla. ....  | 348 |
| H. G. Dollman, Indianapolis, Ind. ....    | 339 |
| S. D. Page, Jacksonville, Fla. ....       | 325 |
| N. S. Bunting, Jacksonville, Fla. ....    | 310 |
| F. C. Payne, Los Angeles, Cal. ....       | 200 |

## MAKING JACKETED BULLETS

(Concluded from page 13)

will displace a certain amount of jacket metal into the grooves, and that there will be a certain amount of upsetage from gas pressure. The English designer logically uses a sub-caliber bullet having a soft, thin jacket to aid his expected happenings; while the American manufacturer logically employs a hard, thick jacket to hold his bullet in form and diameter as he loaded it. The hand-loader might well bear such practices in mind when determining what thickness of jackets he will use, and what final diameter his bullets shall be as he finishes his swage. He may need a swage two or three thousandths of an inch larger for hard, thick jackets than for soft, thin ones, to be fired in the same gun.

One gets deeply into consideration of bullet form and structure before he goes very far in this study. For instance, the making of soft-point bullets the amount of exposed lead tip must vary with the strength of the jacket. Lots of exposed tip in front of a thin jacket will cause the bullet to fly to pieces on striking "hot butte," thus making it ineffective on any large game. On the other hand, any tip less than three-eighths of an inch will fail to mushroom much in game if driven through by a jacket of thick copper tubing.

The velocity has a great deal to do with mushrooming action. At very high velocities obtaining within 100 yards of the muzzles of our best modern rifles the slightest opening in the front of the bullets means good upsetage. When the speed falls below 2,000 feet per second, however, there is another story. All these features must be taken into consideration by the bullet maker.

One can hardly make as good bullets by hand as the factories give us, no matter how carefully we work. To insure accuracy in shooting, everything mentioned in former chapters regarding bullet balance, form, throat fit, weight uniformity and the like must be applied. It is best to stick to standard shapes exactly. A change in length of bearing or in ogive may have serious effects on the pressures it helps to generate, and on its accuracy and ranging capacity. If desired, boat-tail bases may be swaged by hand, but to do so multiplies the probabilities of getting the bullets out of true form. The flat base-form is much simpler to fabricate well.

The diameter should be correct to within half a thousandth, at the most. Good factory bullets vary about three ten-thousandths.

Swages and dies wear rapidly beyond such a small tolerance. In the factories the life of a single die may be only two or three days, or only a couple of thousand operations through it. Its material must be the very best tool steel, and it must be tempered hard.

The hand-loader attempting to make a swage will be confronted at once with difficulties in maintaining the fine dimensions through the tempering operation. Some steels will shrink; others will expand. Some tempering solutions will cause warping out of true. To cut the swage and ream and polish it exactly right



is hard enough, and one may become discouraged by ruining a few of his attempts.

It is not my purpose here to tell how to make a swaging outfit. The best plan is to get in touch with a capable tool-maker, and allow him to aid in the designing in connection with the equipment of his shop and the kind of steels available. In May 15, 1920, issue of "Arms and The Man," Mr. Charles W. Graham described at length a successful two-piece swage he made, giving drawings of the parts. In May, 1921, issue of "Outdoor Life," "Bill" described another type of swage. Both should be obtained by anyone interested.

Certain features are essential in any swaging outfit, no matter of what type. The reamer, which corresponds to a bullet cherry used by makers of bullet molds—the true shape of the bullet, point and all—will usually cut about two thousandths of an inch larger than its own true diameter. It must be made of drill steel rod, first shaped to the bullet form, and tempered, and finally honed sharp. Light blue or purple is the color usually employed in drawing the temper.

This reamer will cut a number of swage blocks. Since the latter wear quickly in use, it is usually best to have a number of them bored roughly, ready to be finished in a vise with the reamer when they are required. A shooter needing bullets of larger and smaller caliber can rebore and reream worn swages if he has a second reamer of larger caliber.

The swage itself is made by drilling out the interior carefully until the cavity is within five or ten one-thousandths of an inch of the required dimensions, then applying the reamer to make the finish cut. After that it is tempered, and later lapped out smooth and true. The driving punch must fit closely, to prevent films of lead from flowing up by its edges, and to insure true line of pressure.

It takes careful workmanship to keep the bullet-point plunger concentric with the body of the swage cavity. It often draws out of true in the tempering.

All pieces must be tempered hard throughout their length, to prevent upsetting and bending. The swage should be tempered by a stream of water or oil through inside.

The swage can be constructed to apply pressure from the bullet's base or its point as required. Bullets of different lengths can be formed in one swage, although not quite so accurately as when a shoulder on the pressure plunger limits length and aids in securing uniformity of weight. Full jacketed bullets, of course, should have their cores inserted from the base, and a heavy base-crimp should complete them, leaving little lead exposed. Soft-point bullets should have either solid bases—as the heads of rim-fire cases—or should have heavy base-crimps formed in a separate swage if tubing is used. Their points then can be closed to any form desired with one or more punches made for the purpose. Hollow-point bullets can be obtained in this way.

If the core is not almost in its proper size and form, it had better be swaged roughly so in a separate die, or else cast so. One of

the problems of the operation is to prevent sticking, stretching, distorting, and even tearing of the jacket when the compression is applied and when the formed bullet is removed. Some lubricant is necessary. Soap suds sometimes works well. A very thin oil made by mixing a teaspoonful of 3 in 1 in several times that quantity of gasoline and applied as sparingly as possible is better.

Take the bullet out and turn it half way round when partly formed for finest results. The necessary force can be obtained from a hammer, but a heavy vise or arbor press is better. It is surprising what light pressure on the handle will accomplish the purpose.

## 'BIG GAME HUNTING'

Whelen's Latest Book

Reviewed by J. R. Mattern

**A** TIRE D man could walk three miles out of his way before supper with profit to get Major Whelen's latest production.

The woods and game subject is one in which this author will be new to many readers. His fresh approach has accomplished a fine thing—in a thin little volume of only 93 pages he has lifted the essentials of this subject cleanly from the sea of discussions found in larger books. Its absorbing word-sketches of the real thing will charm any person. Its concise woods lore and game-shooting lore will place the book on the permanent shelf of every reader, old hunter or amateur.

The dedication of the book reveals its trend and spirit. It is: "To the old time guides, like the wilderness, fast disappearing. They taught us both the romance and the joy of then open places." In his foreword, Major Whelen explains how a textbook may shorten a hunter's apprenticeship to old man Experience, and mentions that this book deals with the hunting of big game for sport on the continent of North America.

The book is made unique and invaluable by Major Whelen's own particular vigorous common-sense angle of view and his characteristic expression of exceptionally sane opinion. No other book will take its place. For one, I do not believe that the author yet guesses what a gem he has been lucky enough to assemble from his wealth of observation and experience of thirty years and longer.

I have never read anything which goes more directly right to the heart of the matter in hand. In consequence the book is brief. It is quickly read, easily digested, strikingly convincing. It rounds out its subject well because of the author's remarkable faculty of selecting the important things—for placing the emphasis where it is found in reality. He knows what actually matters in the big woods and what is mere talk.

The discussion of footwear is an example of the sanity which marks the book. Old outdoorsmen know that designs of most of our modern shoes are simply crazy. They hand-cap or absolutely disqualify hunters afield. Beginners often do not know this. The author says that "I know of but one last that is correct, and none others that are even good," and proceeds to tell exactly what shoe to get and how to arrange it sensibly for all conditions, even illustrating the correct types with diagrams of his own drawing. He is so right in his conclusions that there is nothing much more to be said.

Striking bits of Major Whelen's own wil-

derness experience are a feature of the whole book. They are told so vividly you can see them happening to yourself, and the scenes described cling in your memory as though they were adventures of your own—all of which constitutes a lucid and pleasant way of teaching us what to expect when in the woods after any ceratin game.

"Big Game Hunting" covers a hunter's physical preparation for the trip, his clothing, footwear, belts, rucksacks, pockets, binoculars and guns. A table of rifle-accuracy ranges is included which is unlike any I have seen before. Hunting countries and guides are discussed; the unusual things wholly necessary but often left to chance. It is, gospel, and certainly "inside dope."

Woods hunting in general is covered sanely and soundly, and here many hunters will find the reasons for their own failures to manage the wind and scent and to forecast the movements of game. Special notes on habits and nature of deer, bear, moose, elk, caribou, mountain sheep and goats, each separately, make up two-thirds of the book. And perhaps first of all in interest are a dozen photographs made on hunting trips and half a dozen drawings by the Major showing the tracks of each species, with accompanying notes on distinguishing males from females and other important facts. Finally, there is a check list of supplies for hunters, compiled from notes made about campfires at the ends of long trails.

Books are like thoroughbreds—a noteworthy genesis is required to produce an outstanding specimen. The Red Gods were making strong medicine when the author for this book was chosen. Major Townsend Whelen is much more than one of our foremost riflemen. Back of all his shooting is the idea of its practical use in war or woods. He is a scientific observer with unusual facilities at his command. His house is full of skins, skulls and heads obtained on many a hunt.

A remark in a story printed a few years ago in Outdoor Life magazine concerning a hunt in New Brunswick shows us the hunter-author. "We crossed the bridge over the Tobique at Riley Brook, walked up the hill a piece, climbed over a fence, and at once were lost in a trackless wilderness of birch and balsam. We emerged three weeks later floating down the Tobique River on a raft of logs loaded down to the water's edge with trophies."

He has lived for more than a month in the big woods without a crumb of civilized grub and most of his equipment lost. He has hunted in Central America, Texas, New Brunswick, New York, Maine and Pennsylvania, California and Montana, British Columbia and Alberta. He notches his gun stock for species of game and not for individual heads. He is that rarity now-adays, a man who can be comfortable in the woods, and effective in the woods, and rarer still, a man on whom shooting does not seem to pall.

The book is neither game-hog manuel nor radical non-killer propaganda. It looks on hunting as just one of the lures which entice a person into the clean, unspoiled wilderness. "I value the many hours I have spent studying game, far more than the actual killing," the author says, and continues: "And yet there is something about the fine trophies on my walls that fills a niche that nothing else can occupy. They seem above all else to prove that it was really so, that it was a man's game, and that I played it successfully in a man's way."

Yes, the thin little volume is the one to buy first, whether you seek to brush up for a forthcoming hunt or only want a bit of the "kick" from the wilderness by proxy.



## Hints to Club Officers

### Receipt and Care of Club Equipment.

By Col. C. E. Stodter

**A**S STATED in my last article, it is important that the shipping tickets for property received by the club be signed properly and sent in to this office. Much time and correspondence is now required in order to get these shipping tickets and to keep the property accounts up to date. In some cases it has required correspondence extending from over six months to a year in order to settle the property accounts of the club. If club officers will use more care in this respect it will help this office to give better service and take more prompt action on requisitions and sales. Having received the property, the next problem is storage and care. The property issued to rifle clubs has cost the Government a considerable amount of money and the club is responsible that proper care is taken of it. All property should be stored in a dry, secure place where there is little danger of fire. It is important that ammunition should not be subjected to extreme heat or moisture.

On unpacking the rifles they will be found to be smeared with heavy grease called cosmic. This is used as a preventative against corrosion. Cleaning rods and cleaning materials are not supplied as a free issue to rifle clubs, therefore the clubs should be provided with these articles. The surplus grease should be wiped off the outside of the rifle. The bolt taken out, the firing pin withdrawn from the bolt and wiped clean and oiled with a thin oil like 3 in 1. If heavy grease is left in the bolt it is likely to cause misfires. The bore of the rifle should be wiped out by means of cleaning patches on the end of the cleaning rod. Inspect the bores of the rifles to see if they are in good condition. They should be free from rust, pits or metal fouling. If a supply of cosmic or heavy grease is not on hand, save the patches which you have used in cleaning the bore for use in again covering the entire surface with a film of grease. All the metal parts of the rifle should be protected by wiping them with a greasy cloth and care should be taken to avoid handling them with the bare hand, as this usually causes rust. Remember that the club is held responsible for any damage to the rifles and other material not caused by ordinary wear or by proper use. Clubs have been required to pay considerable sums for the repair of arms turned in by them because they have not been properly cared for. It is generally the duty of the executive officer to take care of the property and the range of the club, however, some of this work, if it is desirable, can be turned over to the secretary or some other officer of the club.

The supplies issued to the club are for the use of the entire club and should not be issued out to individual members, except when used on the range. The club is entitled to 120 rounds of .30 caliber ammunition per member. This does not mean that each member is entitled to draw his 120 rounds from the executive officer and take it home with him. He is entitled to use the ammunition on the range and if some of the club members do not attend range practice there is no objection to the use of the surplus ammunition by other members who are more active. It is realized that two rifles are not sufficient to keep an active club of twenty or more members busy, but the appropriations made by Congress for several years have been so small that it has been impossible to secure a sufficient quantity of rifles and other target material to make larger issues to clubs. It is thought that the supplies issued are sufficient to start the club going, and as the club members develop skill and become interested in the game they usually wish to become the owners of rifles as it is much more satisfactory to own a rifle than to shoot one which is used by several other members. A the club rifles are used by many different persons, great care is required to keep them in good condition. Some officer of the club, preferably the executive officer, as stated above, should be responsible for the care of the property and it should be his duty to see that the rifles are properly cleaned and properly prepared for storage after each day's shooting.

Rifles are rendered unserviceable by erosion and corrosion. Erosion is the burning away of the metal by the powder gases, while corrosion is simply rust. Rifles can be fired many thousand rounds before rendered unserviceable on account of erosion. Corrosion is due principally to the acid residue from the primer. This primer residue can be dissolved by using water, therefore the best method of cleaning the rifle is to pour several quarts of water, preferably hot, through the barrel as soon as practicable after firing. This can best be done by having a funnel provided with a tip which fits closely into the chamber of the rifle. This can be made by cutting off the head of an empty cartridge case, also cutting it off at the shoulder and coldering into this a copper or brass tube of sufficient length to clear the end of the receiver and having a small funnel attached to the end. The rifle can be held or placed in a rack muzzle down, the funnel with tube inserted in the chamber and water poured through the bore. It may be necessary to use a brass wire brush to remove all powder fouling. Usually this can be wiped

out in drying the bore. If a sticky residue remains in the bore after the use of the water, it can be removed with any of the commercial powder solvents. After using water the bore of the rifle should be wiped thoroughly dry with several dry cleaning patches. If powder solvent is used, it should also be wiped out and not allowed to remain in the rifle. After cleaning, the bore should be thoroughly smeared with cosmic or some other gun grease. All grease should be wiped out of the bore and chamber before firing. If metal fouling is observed after cleaning, an ammonia solution should be used. This should be used only by the officer whose duty it is to care for the rifles or by some one thoroughly acquainted with its use. The instruction for the use of metal fouling solution is given in "Rifle Marksmanship," a copy of this publication should be on hand in every rifle club. It can be purchased from this office or from the Superintendent of Documents, Government Printing Office, Washington, D. C., for thirty-five cents a copy. The ammonia solution should be made by a local druggist, as in this way it can be secured in fresh condition. It should never be used in a rifle that is warm from firing. It should never be left in the rifle longer than the prescribed time, it should never be used a second time, and should not be used after it is more than thirty days old. If the first application does not remove the metal fouling, pour it out of the barrel, wash the barrel with water and put in a second dose. After using the barrel should be washed out with water to remove all traces of ammonia solution, as this will cause rapid rusting if allowed to dry on the steel.

Ammunition is packed in wooden boxes which have zinc or tin linings and these should not be opened except as the ammunition is used. On account of exposure to the weather, the outdoor carriers will require occasional attention. They should be kept painted and the movable parts should be oiled and kept free from rust. The wooden target frames should not be left on the carriers after firing unless the whole carrier with frame can be covered and protected from the weather. If the target carrier is placed in a pit, it may be practicable to make a cover in the form of a trap door with sloping water tight roof so to protect the entire pit and the carrier from the rain.

If there is a change in the club officials, the old officers should turn over all property and records to the new officers, taking a receipt for the same, and the new officers should make a careful inspection of the property to ascertain its condition. When club property becomes unserviceable through the wearing or breaking of parts the club should purchase the necessary parts to make repairs. If rifles become unserviceable on account of the lack of accuracy due to long use, they may be turned in to an arsenal, by first making application to this office, and new rifles issued to the club.

In preparing rifles for shipment they should be thoroughly cleaned and greased with cosmic or some other heavy gun grease and then carefully packed. Several clubs have been compelled to pay considerable sums for the repair of rifles which they have turned in because they arrived in a rusty condition, showing that they were not properly prepared for shipment.

In turning in property care should be taken that all property is complete and without missing parts. Shipping tickets should be made out according to instructions furnished from this office.



# THE DOPE BAG



A free service to target, big game and field shots, all questions being answered directly by mail.

Rifles and big game hunting: Maj. Townsend Whelen.

Pistols and Revolvers: Maj. J. S. Hatcher.

Shotgun and Field Shooting: Capt. Charles Askins.

Every care is used in collecting data for questions submitted, but no responsibility is assumed for any accidents which may occur.

## HOW TO USE THE DOPE BAG

By observing a few simple rules, shooters who desire to use The Dope Bag can materially contribute to more prompt and efficient service; also such cooperation will assist the editors in handling the great volume of correspondence.

The Dope Bag is intended to be a source of information not readily available to the average shot. Therefore, before writing, consult the various catalogues and ballistic tables published by manufacturers. Much information can be obtained from them as well as from standard books and publications of the N. R. A.

If these publications do not fully answer the question, write to The Dope Bag, marking your letter for the attention of the editor in whose field the query falls; and applying to the Director of Civilian Marksmanship—not the Dope Bag—on arms and ammunition available for sale and the prices on same. It is impracticable to refer letters around.

Write legibly on one side of paper only and sign name and address legibly. Almost every mail contains letters that can not be deciphered and hence can not be answered.

## Wartime Cartridges Cases—A Correction

By Townsend Whelen

THE caution on the above-mentioned subject which appeared in the July first number of The American Rifleman was not worded as clearly as it should have been, and a misconception has arisen as to its meaning which it is desired to correct. It was not intended at all to convey the impression that loaded war time ammunition was at all unsafe or unreliable. Quite the contrary, this ammunition is perfectly safe and reliable, and not the slightest apprehension need be felt in its use. Every lot of this ammunition, and of peace time ammunition as well, is annually submitted to a most careful and thorough surveillance test by the Ordnance Department. The components, including the powder, are critically examined, and the ammunition as a whole is tested for pressure, velocity, and accuracy, and any lots which show deterioration are withdrawn from issue and stock, and are salvaged. As a matter of fact, deterioration, if it does occur consists of some such defect as split necks of the cases, which does not render the ammunition unsafe, but simply unsatisfactory. I should like to make it clearly understood that any ammunition issued by the Ordnance Department of the Army, or sold to members of the National Rifle Association by the Director of Civilian Marksmanship is perfectly safe and perfectly reliable for use in the weapon for which it is intended. As to the suitability and reliability of this ammunition manu-

factured during the past war, we have only to examine the reports of small arms firing of the Army for the past two years. These reports show that never before have so large a proportion of the men firing qualified in marksmanship. In a great many organizations over 90 per cent have qualified as marksmen or better. Throughout the Regular Army the percentage qualified is very markedly superior to that pertaining before the war, and in every case war-time ammunition has been used.

What it was intended to convey by the caution was that it is unwise for riflemen to reload the fired cartridge cases of war-time ammunition with those heavy and maximum charges that have been recommended by some in recent years. I refer particularly to charges with heavy bullets giving a mean pressure of upwards of 53,000 pounds per square inch. I have never personally recommended these charges, but I know that in many localities riflemen are reloading fired cases with them quite extensively. The Ordnance Department has not for many years reloaded any fired cases with the service charge. While these fired war-time cases in good condition will be safe when properly reloaded with charges giving the service pressures which run from 48,000 to 50,000 pounds, such cases should not be reloaded with charges giving mean pressures in excess of these figures.

### THOSE .22 CALIBER TESTS

THAT ammunition showed the best in the recent Government tests for the .22 caliber rim-fire Springfield?

Where can gunsmithing tools be bought? What is the meaning of the stamped letter or mark on muzzle end of Springfield .30-06 where barrel is crowned? Is it ever put on .22 caliber rim-fire Springfield?

Please mention the scopes that would be good for stationary shots on a .22 Springfield, for squirrels.

Define monocular for rifle. Is the Spring Scope as good as the Stevens three-power?

E. A. H., Knightstown, Ind.  
Answer (by Maj. Whelen): Recent tests of the .22 caliber Springfield rifle at Aberdeen Proving Ground were not conclusive. They seemed to confirm what was already known, namely, that each rifle had one particular make of ammunition with which it did its best work, and that the rifleman must still make his own test to determine what make suits his own rifle best.

It is impossible to state which is the most suitable .22 caliber Long Rifle Cartridge to use in the .22 caliber Springfield rifle, because different rifles give quite different results with each make of ammunition, and an actual trial with each make and lot is necessary to determine which does the best work in a particular barrel. This also pertains to all makes of .22 caliber rifles.

This matter of selection of ammunition is more important than most riflemen believe. Moreover, the lot of ammunition is just as important as the make. For example, a man may purchase 500 rounds of a certain make of cartridge and they shoot finely in his rifle, averaging 2½-inch groups at 100 yards. He uses these up and buys 500 rounds more, and this lot shoots rotten, averaging around 6 inches at 100 yards, because his second lot came from another case, made on another machine on another day. This is no exaggeration—it happens often.

About the only safe way is to purchase 100 rounds of a certain make from a dealer, try them out at 100 yards with a steady sandbag

rest. If they prove accurate (2½ inches or less at 100 yards) go back to the dealer and get 1,000 rounds from the same case the 100 rounds came from.

In a hunt for the most accurate ammunition for small bore shooting the rifleman should confine his search to the following brands of .22 caliber Long Rifle Cartridges:

United States Cartridge Company—N. R. A.  
Winchester Repeating Arms Company—Precision 200.

Remington Arms Co.—Palma.  
Peters Cartridge Company—Outdoor Tack-hole.

Western Cartridge Company—Marksman.  
The figures and letters on the muzzle of the Springfield rifle refer to the arsenal at which it was made and the month and year in which the barrel was made.

You will find the Winchester Type A-5 power telescope sight, and the Pecker telescopes of less than 6 power are excellent for target shooting and squirrel and woodchuck shooting. They should be mounted with Winchester mountings and No. 2 rear mount.

I have never heard of a monocular for a rifle. A monocular is a field glass, usually a prism glass, with but one barrel or telescope. Really it is a shortened telescope.

The Spring Scope will not take the place of a good telescope. It gives a little better definition on a target than ordinary metallic sights, but is useless for target shooting, as one can only define with it against white objects (like the white of a target, or against the light of the sky).

### A DOUBLE RIFLE

I HAVE ordered a double-barreled hammerless 12-gauge shotgun, with single trigger. Why can not I have an extra pair of barrels made to fit this frame and chambered and rifled for the 30-30 or 30-40 cartridge? It seems to me that the action is surely strong enough and the accuracy should be good enough for snap-shooting. Please advise me if this would be practical. I have never heard of this being done and would like to know why.

I have just ordered a Russian rifle and 1,000 cartridges from the D. C. M. I know nothing about this rifle. Is it capable of being remodelled and made about two pounds lighter? Is it accurate enough to be bothered with—I mean converted?

In order to relieve the monotony of straight target shooting, we have been using tin pie this thrown rather high in the air, from one man to another, the shooter standing 50 yards from the firing, or "throwing" points. With a little practice it is not difficult to get five straight, and creates a lot of enthusiasm.

H. H., Dubuque, Iowa.

Answer (by Maj. Whelen): The making of a double-barreled rifle is a real art. A high degree of skill is required in the manufacture, and particularly in the adjustment of the two barrels so that they will shoot together. Double-barreled rifles have never been satisfactorily



made in America, partly because there is no demand for them in this country, the accuracy they are capable of being not quite good enough for the ranges at which we frequently have to kill our game. Also, the price is against them. Poor or cheap double-barreled rifles are worthless, often unsafe, and unless the sportsman is prepared to pay the price asked by the best makers who are the only ones who have really developed the art of manufacture and adjustment, he had better stick to a magazine or single-shot rifle.

While the Germans have made a large number of double rifles, quite generally they do not pay enough attention to the adjustment, and as likely as not their barrels will shoot two feet or more apart at 200 yards, and each barrel may give a group as large as a foot at that distance. The art has been brought to a satisfactory state only among half a dozen British gunmakers. I would recommend particularly James Purdy and Sons, Audley House, South Audley Street, London, W. 1, or Holland and Holland, Ltd., 98 New Bond Street, London, W. 1. They are the best makers of double rifles in the world. They charge around \$600, making the price in the United States around \$1,000. This is for English cartridges. For American cartridges a great deal of development work, and new tools would have to be made, and the price would probably be at least \$250 more.

Relative to using rifle barrels and shotgun barrels on the same stock and action, this is entirely practicable provided that the action be made with this in view. Double actions for use with rifle barrels are made very much stronger than purely shotgun actions. They are generally have Purdy side clips, and tripple bolts, and are smaller than shotgun actions. If one is going to combine shotgun and rifle it would be better to have the shotgun barrels 20-gauge, then the rifle barrels would not have to be so large at the breech. Anyway, to make a 20-gauge action strong enough for high power rifle barrels would probably necessitate a new forging and special hand work throughout, and I imagine that a conservative estimate for a gun with two sets of barrels, 20-gauge and .303 British would be \$1,000 in England, or for the .30-30 or .30-40 cartridge \$1,250.

The Russian rifle and its ammunition will probably give them 8 to 12-inch groups at 300 yards from machine rest, but owing to the very crude sights it will be difficult for the marksman to do so well. I know of no satisfactory American sights for this rifle. The long fore-end can be cut off to sporting length and the rifle thus lightened a little. It is hard to get pleasing lines out of the crude military stock.

Your match at thrown pie plates is quite unique. I should think it would prove very interesting and exciting, and should be fine practice for snap shooting.

#### GAME GETTERS

WILL appreciate it very much if you will give me your opinion regarding the serviceability of the combination arm "Marble Gamegetter".

(1) What is the accuracy of the 22, with the sights furnished?

(2) What is the accuracy and effective range of the ball cartridge? At this effective range what would be the largest game it could be satisfactorily used on?

(3) What is the effective range of the shot cartridge? would it be satisfactory for pheasants or grouse for quick shooting along fire lines?

From data at hand I believe the 15-inch barrel would be best all around length and would ask you to base the answer to the above on this length with any comments you would make regarding other lengths.

My proposition is to carry this arm in connection with my Springfield when in Pennsylvania woods during the big game season, using it particularly in the evenings when returning along the fire lines for birds; and during the winter and summer seasons using the 22 for practice work.

M. C. G., Erie, Pa.

Answer (by Maj. Whelen): I have one of the Game Getter Guns with 12-inch barrel. I have used it a lot, but only with the .22 caliber barrel. I find that I can quite regularly keep ten consecutive shots in an inch circle at 25 yards with it, shooting from extemporized rest. The weapon is undoubtedly more accurate than this, the difficulty being in getting a uniform aim for every shot with the rather short sight radius.

I regret to say that I have never tried the shot barrel of the gun, either with the ball or the shot cartridge, so I can therefore only refer you to the information thereon in the Marble general catalogue.

I consider the weapon a most excellent one for your particular purpose. A 15-inch barrel will undoubtedly give slightly superior results to a 12-inch barrel, but on the other hand it will be slightly more awkward to carry.

#### GUNS FOR PUMA AND MULE DEER

I AM arranging an outfit for collecting Puma and Mule Deer in the mountains of southern Utah for the Brooklyn Museum. From reading your interesting book on the American rifle and having heard that on your recent trip you experimented with newly developed ammunition, I would like to inquire, if you will be kind enough to advise me on what you believe to be the best cartridge for the Springfield rifle to be used in collecting the specimens mentioned above.

I am just a reasonably good shot and being a taxidermist, know about where to place the bullets. It is essential in killing specimens for our purpose that the skins should not be torn up too much, which is often the case with some of the modern high-power loads. Mr. Riggs of the Western Cartridge Company, advised me to take the matter up with you.

R. H. R., Brooklyn, N. Y.

Answer (by Maj. Whelen): On such game as puma and mule deer the various high velocity, expanding bullet cartridges for the Springfield with velocities around 2700 f. s., are quite destructive of tissue and skin. The bullet has quite an explosive effect, and frequently the point of exit of the bullet is five or six inches in diameter.

I would rather recommend the .30 caliber Model 1906 Springfield sporting ammunition loaded with 220-grain soft-point bullet, being more satisfactory for your purpose. It has ample power, and the trajectory is plenty flat enough for your purpose. Even this ammunition is rather of excessive power for the game mentioned, and will give a hole of exit usually about two inches in diameter. Should you so desire, I imagine that any of the cartridge company could load you special ammunition with this bullet (220 grains soft-point) to give about 2000 f. s. muzzle velocity, which would be almost ideal for your purpose. But really I do not think you will have much fault to find with the regular factory 220-grain load.

#### THE SWISS STRAIGHT PULL

I HAVE read your article in the Arms and the Man where you said that you had photographed. Several kind of foreign ammunition in their respective rifles. I would like to know how the Swiss come out, and also if you still have the empty shells, if so, would you sell them, and how much, as I have one of these rifles but can not get ammunition and have only 10 shells, which I reload many times and are about to give out. It is the 1911 model.

C. D. M., Seattle, Wash.

Answer (by Maj. Whelen): The following is the test of the Swiss straight-pull army rifle:

|  |              |
|--|--------------|
| Barrel length                                    | 30.50 inches |
| Groove diameter                                  | .307 "       |
| Rifling, one turn in                             | 11.00 "      |
| Bullet diameter                                  | .3073 "      |
| Bullet weight                                    | 174 grains   |
| Powder, flake nitrocellulose                     | 49.2 "       |
| Velocity at 78 feet                              | 2675 f. s.   |
| Accuracy at 600 yards, average of three targets: |              |
| Group diameter                                   | 22.93 inches |
| Mean radius                                      | 7.23 "       |
| Extreme vertical                                 | 20.80 "      |
| Extreme horizontal                               | 16.86 "      |

From the above it will be seen that in no respect except extreme range can the Swiss army rifle or its ammunition compare with ours. However, Swiss independent gunsmiths have brought their "free" rifles to a high point of excellence, and the Swiss Government manufactures very excellent ammunition for these free rifles in the same way that we manufacture National Match and Palma ammunition.

This rifle was tested in the proof house at Frankford Arsenal about eight months ago. The cases, having Berdan primers, were not regarded as of any value, and were scrapped. I regret that I can not tell you where you can get cases for this ammunition.

#### WALKING BARRELS

I HAVE a Ross .280 that I want to use as a target rifle as well as a sporting gun. I have a Lyman No. 48 which I have dropped down low enough to use the original front sight. The rear sight band, the swivel band and the front sight band all fit tight and I was contemplating leaving the rear open sight on so that I could lift the Lyman and use it, and I intended cutting through the rear sight and swivel band to one side of the base so that the stock would hide the cuts and cut the front sight band dead bottom center. Would you call that good practice to prevent the amount of walk a barrel with tight bands usually have.

H. C. Danielson, Conn.

Answer (by Maj. Whelen): Bands have little or nothing to do with the walking of a barrel. A barrel probably "walks" because it is long, thin, and the steel is not completely homogeneous. It is seldom that a barrel walks during the ordinary firing occurring on the target range. I would not advise cutting the bands. This will probably make them loose, and then it will be necessary to solder them on.

#### JACKETED BARRELS

WE HAD an interesting discussion at the meeting of the Wyoming Rifle Association, especially after the finish of the two 1000-yard matches. There were in the field some regular barrels, two or three pressure barrels and some heavy ones made by Niedner and Andrews. To match these Jim Wade, who you may remember was a top notcher at Caldwell and Jacksonville and shot on the American Small Bore Team at Caldwell, had conceived the idea of fitting a gas pipe around the regular barrel and then filling the intervening space with babbitt. Jim is a very good doper and holder and started in with a straight run of 13 in the bull and the elevation was fine, but on the 15th shot went out suddenly and from there on the barrel seemed to scatter all over. The pressure barrel kept steadily at work and finished with 98. I was using a regular barrel, a trifle wore out from erosion and made 97. Wade was undoubtedly in good form and the poor shooting at the finish was without question due to his rifle. My argument is that you can not expect uniform shooting in a barrel of this description only if you keep it cooled all the time. The different coefficient of expansions and contraction in nickel steel and babbitt preventing the uniform vibration of the inner barrel. Also, the day being very hot, there would be tendency for the babbitt to work away from the inner tube by melting. What is your opinion of the matter?

E. L. C., Shoshoni, Wyo.

Answer (by Maj. Whelen):

Without knowing positively, I should say that probably the cause of the falling off in accuracy of the barrel surrounded by a pipe filled with babbitt metal was due to the vibration and heating of the barrel, loosening the uniform contact with the babbitt metal, and localizing this contact and only a few points.

I understand that recently Frankford Arsenal got excellent results from a barrel contained in a pipe filled with water. This would not be open to the same objection. Of course, care must be taken to keep the jacket full, and not to heat sufficiently to cause the water to boil. It would be interesting to have others try this.

#### THE 6.5 MANNLICHER

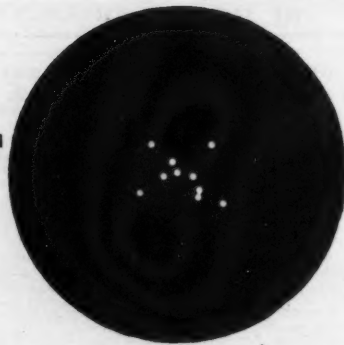
I WOULD like to ask a few questions about the 6.5 mm. Schoenauer rifle. I had planned to purchase one of these rifles but a friend who has seen a Schoenauer 6.5 mm. tells me that the pull of the front trigger was eight or nine pounds, and he did not seem to think it could be reduced satisfactorily. (1) Do you think that by working carefully, I could reduce the pull to three or four pounds? (2) What charge of Du Pont No. 18 would you recommend with Western 140-grain, pointed bullet (18 in. barrel)? (3) Is the 140-grain bullet as accurate as the 160-grain weight? (4) What would be the trajectory of this rifle with 140-grain bullet at 2400 feet sec's and with 160-grain at 2200 feet sec's? (5) Do you consider the Schoenauer to be a good all round rifle?

Answer (by Maj. Whelen): It happens that I have just completed a thorough test of a 6.5 mm. Mannlicher-Schoenauer rifle, 25-inch barrel. The factory sights are impossible and the rifle was unable to do anything with it until I had equipped it with a Lyman No. 2 rear sight on the end of the bolt, and a Lyman gold bead front sight of the proper height. These were perfectly satisfactory. I used Western ammunition, both 160 and 140-grain bullets. Both averaged about 3% inches at 100 yards. No metal fouling.

The trigger pulls are usually poor and hard to adjust. One is liable to spoil the parts and have to send to Austria for others. The bolt handle is so far forward that one can not reach it to function rifle in rapid fire while the butt remains at the shoulder, but must take the rifle down after each shot to work the bolt. The shape of the bolt handle is such that it slips through the hand, and one can not put "beef" to the gun to extract or insert a sticking cartridge or case. In the prone position only the heel of the butt plate bears on the shoulder, and gives one a painful jab at each shot.

For big game I should much prefer the 160-grain bullet as being a much better killer. For this bullet the best charge is 37 grains of Du Pont No. 15 powder—M. V. 2344 f. s. in 26-inch barrel with 50,990 pounds pressure. However, it seems to me that this and all factory cartridges are slightly overcharged, as all the cases seem to stick slightly on extracting, making rifle hard to work in rapid fire, particularly with the poorly shaped bolt handle.

To sum up, the Mannlicher-Schoenauer is a good example of the very best of the foreign made rifles. But we have been spoiled in this country lately with our splendid Springfield and Krag rifles, which are far better in every way. I would far prefer even a \$10.00 Krag with Lyman sights to the Mannlicher-Schoenauer. It is a better killer, more reliable, and better in every way.



# Two New World's Records

When Leon Dezert, of Pasadena, California, announced at a recent shoot that he intended to try for a new world's record over the small-bore Palma course, the skeptics winked and some even laughed out loud. But not Mr. Dezert.

Placing his confidence in the super-accurate Western Marksman cartridge, he started off with two sighters in the black. All his shots at the first two stages—150 and 175 yards—were well within the bull's-eye. The skeptics began to take notice. When he came to the real test at 200 yards, his sighters again were pin wheels and he followed these with 15 more that punctured the black and set a new world's record. Then just to show that his performance was no accident, he placed 9 more Marksman bullets in the bull's-eye before he missed.

This performance of 54 straight bull's-eyes besides 6 sighting shots, or a total of 270 points, was made with iron sights and establishes a new world's record that bids fair to stand for some time.

Not to be outdone, Mr. Dezert's team mate, E. E. Steminger, also using Marksman cartridges, got out of the black only twice, making his total 223 points. Their combined score of 448 out of a possible 450 is another world's record for some ambitious team to aim at.

Performances like these prove that the Marksman super-accurate 22 L. R. is a worthy little brother to the famous Western 30-06's and shotgun shells. They have all proven themselves worthy of their name—The World's Champion Ammunition.

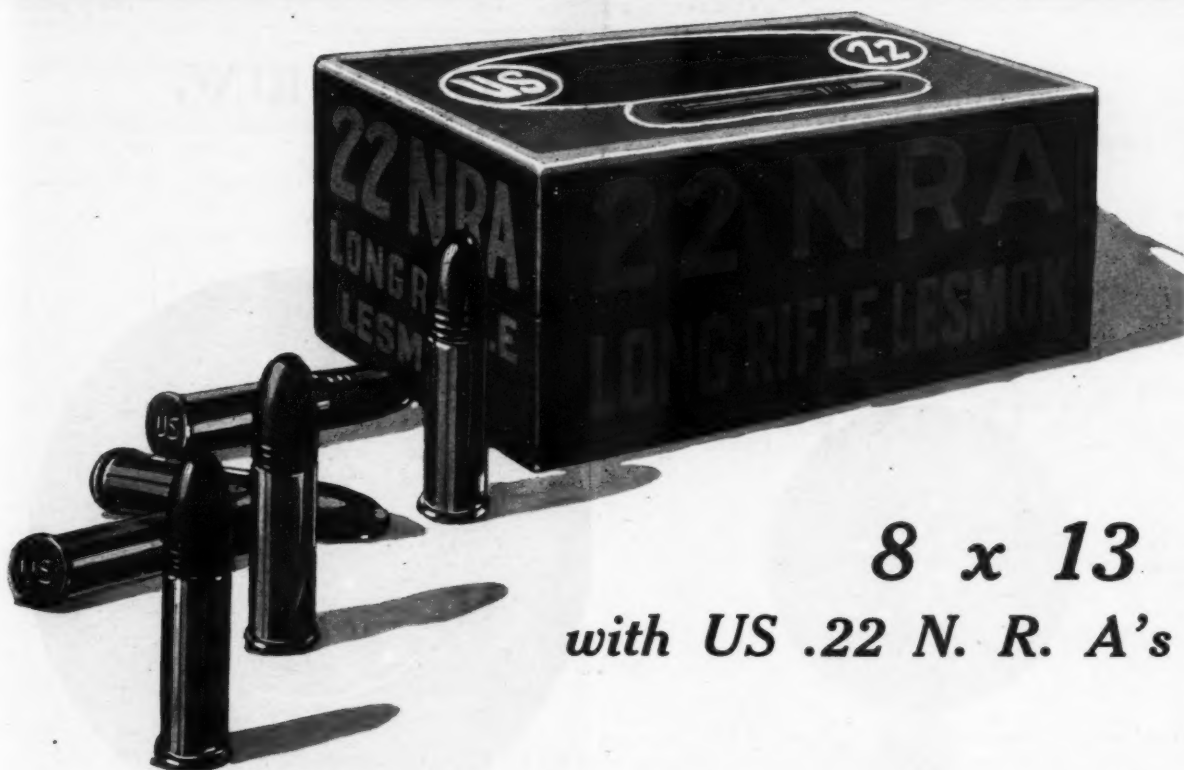
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at Camp Perry. The boys  
will be glad to see you.*

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# Western

## AMMUNITION





**8 x 13**  
with **US .22 N. R. A's**

The National Matches at Camp Perry are now on. Here's what shooters at the 1922 National Matches accomplished with US .22 N. R. A's.

**The Grand Aggregate**

1, 3, 4, 7, 8, 9, 10

**Small-Bore Wimbledon Match**

1, 2, 3, 4, 6, 7, 8, 10

**100-Yard Sweepstakes**

1, 5, 6, 7, 8, 9, 11, 12, 13, 14

**50-Yard Sweepstakes**

4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 19, 20

**Off-Hand Sweepstakes**

1, 2, 4, 6

**Junior Re-Entry Match**

1, 2

**Small-Bore Unknown Score Match**

1, 2, 3, 4, 5

**Camp Perry Shot Gun Championship**

1, 2, 3, 4, 5, 6

**All Around Championship**

1, 2, 3, 4, 5

**US .22 N. R. A. and the Black Shells used**

**Long Range Re-Entry Match**

2, 3, 5, 6, 8, 9, 10

**Small-Bore Marine Corps Match**

2, 4, 7, 8, 9

**Small-Bore National Individual**

2, 3, 6, 7, 9, 10, 11

**Small-Bore Swiss Match**

3rd

This impressive record of victories by US .22 N. R. A. users proves superiority in ammunition as well as in marksmanship.

**UNITED STATES CARTRIDGE COMPANY**

Commercial Row  
Camp Perry, Ohio.

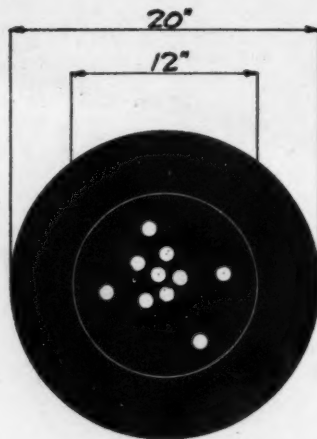
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**.22 N.R.A.**  
*Long Rifle Cartridges*



## SHOOTING INSIDE THE V RING



Average Group at 600 yards plotted in a 20-inch Bull containing a 12-inch V ring



Average Group at 1,000 yards plotted in a 36-inch Bull containing a 20-inch V ring

Most of you remember that a few years ago it was unusual to find ammunition that would keep all of its shots inside the 20-inch bull of the B target at 600 yards, and which would also make average groups that were less than the size of the 36-inch bull of the C target at 1,000 yards.

And then HiVel came along and established so many long-run records that a 12-inch V ring was put inside the 600-yard bull's-eye and a 20-inch V ring was added to the C target.

And now, in the 1923 ammunition tryout, it was discovered that the new National Match, HiVel ammunition **will shoot in the V ring.**

At 600 yards, fifteen consecutive 10-shot groups were fired and every one of the one hundred and fifty shots would strike inside a 12-inch circle. The

average group was less than  $7\frac{1}{2}$  inches square or within  $1\frac{1}{4}$  minutes of angle, while the largest was 6.7 inches high by  $11\frac{1}{2}$  inches wide.

At 1,000 yards, this new machine-loaded ammunition shot groups that averaged 19.3 inches high by 14.10 inches wide and sixteen of the thirty groups would have placed every bullet in the V ring. The largest group at 1,000 yards was only 27.7 inches high by 19.2 inches wide—a margin of over 4 inches inside the V ring.

And another good point of this year's ammunition is that the 170-grain boat-tail bullet starts out with a muzzle velocity of 2,650 foot seconds, developed with an average breech pressure of only forty-one thousand six hundred and ninety (41,690) pounds.

These are the latest developments with HiVel.

# Hercules Powder Co.

Wilmington, Delaware



Model 1919 .22 Savage N. R. A. Rifle. 25-inch barrel, full military stock, oil finish, pistol grip with bands and swivels for sling. Springfield type front sight, wind gauge aperture rear sight, five-shot detachable box magazine, chambered for .22 long rifle cartridge only, supplied rifled and chambered for .22 short to special order only. Weight about seven pounds.

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The Savage .22 N. R. A. rifle was designed and modeled in the way we believe you'll agree a finely precision instrument of this kind should be made.

In the first place, it was not altogether our own idea to make a .22 match rifle. It started with requests that continued to pour in from some of our best known and most skillful small-bore riflemen.

They had tried other Savage rifles and were so struck with their accuracy that they wanted to get Savage barrels, rifled the Savage way, made to order for their military type match rifles.

We got them to let loose their feelings about what they thought a small-bore match rifle should be.

And we made the Savage N. R. A. repeater to meet their demands.

The Savage N. R. A. has been doing great work now for several years. Deadly accurate—and it fits.

From the tiny woodchuck to the great Alaskan Bear, there's a Savage for every kind of American game. Single shot and repeating .22's, the famous Savage High-powers; and sturdy repeating shotguns.

Write for the interesting catalog describing our line.

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23-inch round barrel, genuine American Walnut stock, pistol grip, 5-shot detachable box magazine, chambered for .22 long rifle cartridge, weight 6 lbs.



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8 power in 20 inch length

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**Marble's Line** also includes Safety Pocket and Camp Axes, Cleaning Rods, Hunting Knives, Gun Sights, Waterproof Match Box, Compasses, Fish Gaff, Auxiliary Cartridges, Shell Extractors and Recoil Pads.

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Thoroughly cleans without injuring the finest rifle and removes all lead, rust or powder residue. Made of sections of softest brass gauze washers, on a spirally bent spring tempered steel wire—may be attached to any standard rod. 60c. State caliber wanted.

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When saturated with oil they prevent rusting or pitting—perfect protection for any gun. One oiling lasts for years. For shotguns or rifles, 60c; for revolvers, 30c. State gauge or caliber wanted.

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This wonderful oil will keep sportsmen's equipment free from rust—it quickly dissolves the residue of all powders. A perfect lubricant. 2-oz. bottle, 20c; 6-oz. can, 60c. By mail, 10c extra. Sample free.

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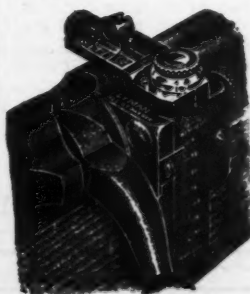
Have you heard of our new 7 mm. Hunting Rifle? It uses the new Western Cartridge Company cartridges, having a 139 grain, open point, Lubaloy, non-fouling bullet. The muzzle velocity in 26-inch barrel is 2900 f. s. Muzzle energy 2600 ft. lbs. 200-yard trajectory, height at 100 yards 2.2 inches. Accuracy up to 500 yards equal to the best match ammunition in a star gauged Springfield. And the rifle has a nickel steel barrel with taper having compensating vibration, the very finest double micrometer sights designed for hunting, Mauser or Springfield action, splendid trigger pull, steel butt-plate with trap and tools, just enough engraving to take away the plain appearance, matting and checking where they are necessary, and the very finest imported walnut stock you have ever seen. With reduced loads this rifle is small enough for the smallest game. With the full charged cartridge it has all the excellent killing power that characterizes the .280 Ross cartridge. The recoil is insignificant. It is the coming rifle for American big game. Send postal for circular.

### Lyman Sights Again Chosen for the American International Rifle Team



No. 17 Special  
Target Front for  
Springfields, \$4.00.

Lyman Sights will be used by the American Team in the international Rifle Matches at Camp Perry this month.



No. 48 Micrometer Receiver for Springfields and other rifles with Mauser receivers.

For two successive years the rifles used by our Team have been Lyman equipped. Both matches were won by our men. It is only natural that sights so thoroughly tested for close holding with minimum eye strain should have first place in the choice of sight equipment for this year's Team.

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## Owners of Bolt Action Guns

### Item worthy of your attention

On account of the long stretch of space occupied by the bolt and firing pin, the greatest difficulty encountered in mounting a telescope on a bolt action gun is getting the scope back far enough to the rear to give the proper eye distance. Using the mounts and bases now on the market, this obstacle is overcome by using a long scope, 22 to 26 inches long. There is no excuse optically for scopes over 17 inches long, and this difference in length is only superfluous weight and cumbersome length.

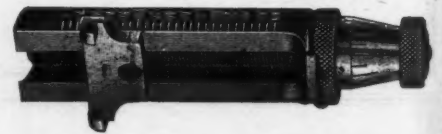
We have succeeded in perfecting a bolt action base whereby even our 13-inch scope, with its 3-inch eye relief, is brought sufficiently far to the rear to perfectly accommodate any position of the shooter, from prone to off-hand. This we accomplish by bringing the rear mount base back over the bolt instead of over the barrel, as is customary.

With our model of base, the shooter selects a scope for its optical qualities, not because its length especially adapts it to the bolt action gun.

**Descriptive matter will be sent on request.**

**Belding & Mull**

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